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USABILITY OF WEBSITES IMPLEMENTED WITH OPEN
SOURCE PUBLISHING PLATFORM WORDPRESS

-Case company Go:group Oy

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AVOIMEN LÄHDEKOODIN JULKAISUJÄRJESTELMÄ WORDPRESSILLÄ TOTEUTETTUIJEN VERKKOSIVUJEN KÄYTETTÄVYYS

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Tämän opinnäytetyön tavoitteena oli kohdeyritys Go:groupin toteuttamien, avoimen lähdekoodin julkaisujärjestelmä WordPressillä toteutettujen, verkkosivujen käytettävyyden tutkiminen ja mittaaminen. Kohdeyritys on täyden palvelun digitoimisto, joka tarjoaa verkkopalveluita ja konsultointia asiakkaidensa tarpeiden mukaan. Tutkimuksen kohteena oli verkkosivujen käytettävyyteen vaikuttavien tekijöiden selvittäminen sekä validin tiedon saaminen verkkosivujen käytettävyydestä Go:groupin asiakkailta. Kohdeyrityksellä ei ollut aikaisempia tietoja aiheesta omilta asiakkailtaan.

Tutkimustyön teoriaosa koostuu käytettävyydestä, verkkosivuista sekä käytettävyyden mittaamisesta. Tutkimus keskittyy verkkosivun käyttämisen viitekehykseen, verkkosivuun itseensä, sivuston tavoitteisiin sekä käytettävyyden mittaamisen arviointiperusteisiin. Teoriaa on käytetty perustana käytettävyyden mittaamisen kriteerien johtamiselle.

Tietoja ja palautetta WordPressillä toteutetuista verkkosivuista kerättiin toteuttamalla puolistrukturoitu kysely kohdeyrityksen asiakkaille puhelimitse. Vastaajien lukumäärä oli 22, mikä mahdollisti validien johtopäätösten vetämisen siitä, kuinka Go:groupin asiakkaat mieltävät avoimen lähdekoodin julkaisujärjestelmä WordPressillä toteutettujen verkkosivujen käytettävyyden.

Tutkimuksen lopputuloksena oli, että keskimäärin käytettävyyden arviointiperuste vaikuttavuus osoittaa parhaat tulokset käytettävyydestä ja muistettavuus antaa vähiten käytettävät tulokset. Käytettävyyteen vaikuttavien tekijöiden lisäksi kohdeyritys halusi tarkastella asiakkaiden kiinnostusta verkkosivujen ylläpidon ulkoistamista kohtaan. Vaikka kohdeyritys ei ole tähän asti tarjonnut ulkoistamispalveluita saatiin selville, että enemmistö asiakkaista oli kiinnostunut Go:groupin tarjoamasta ylläpitosopimuksesta.

USABILITY OF WEBSITES IMPLEMENTED WITH OPEN SOURCE PUBLISHING PLATFORM WORDPRESS

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The purpose of this thesis was to research and measure usability of websites implemented with open source publishing platform WordPress implemented by the case company Go:group. The case company is a full service digital agency that provides web services and consultation according to their clients' needs. The objective of this study was to research aspects affecting usability of the websites and to receive valid information about the usability of websites from the customers of Go:group. The case company did not have previous data about the topic from their customers.

The theory part of the research consists of usability, websites and measuring usability. The study is concentrated on the context of using the website, the website itself, goals for the site and the usability measurements criteria. The theory has been used as the basis and to derive the criteria for measuring the usability.

Data and feedback on usability of websites implemented with WordPress was gathered by implementing a semi-structured survey to the case company's clients over phone. The number of respondents was 22 which enabled drawing valid conclusions of how the customers of Go:group do perceive the usability of websites implemented with open source publishing platform WordPress.

The outcome of the research was that in average effectiveness as usability measurements criterion indicates the most usable results, and memorability gives the least usable results. In addition to the aspects affecting usability, the customers' interest towards outsourcing the websites' maintenance was examined as expected by the case company. Even though the case company has not offered outsourcing service so far, it turned out that most of the customers were interested in a maintenance contract provided by Go:group.

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1 INTRODUCTION

I worked for company Go:group as a marketing assistant in summer 2013 for three months and during that time I attended several seminars representing the company. One of the seminars was about the experience of using IT-services and usability from the point of view of the customer organized by the Finnish Development Centre of Information Society (TIEKE). During the seminar the discussions between participants were interesting and comprehensive and one participant asked if there would be some studies or data about the topic. Then I started to think whether Go:group had any relevant data about the usability of websites from their customers. (Website of the Finnish Development Centre of Information Society 2013.)

After the three month period as a marketing assistant I continued working for Go:group in corporate sales for one month. I promoted the websites implemented by the case company as usable and easy to use due to the open source publishing platform WordPress. During that month I started to think what a usable website actually meant and consisted of, and how the open source publishing platform WordPress can be reasoned as usable. (Website of Go:group 2014; Website of WordPress 2014.)

I discussed the matter of usability of website implemented with WordPress with Go:group and they did not yet have any data about the topic from their customers. So I decided to study the usability of websites implemented with WordPress by the case company as the topic of my thesis. I chose to measure the topic through a survey to the company's customers in order to receive up-to-date information about the usability of websites implemented by Go:group.

2 PURPOSE AND OBJECTIVES

2.1 Purpose

In this study the usability of websites implemented with open source publishing platform WordPress by company Go:group is researched and measured. The case company uses WordPress to create professional and graphically high quality websites for their clients, but before this study they did not have any data from their customers about the usability of websites. That is the reason why the topic is researched and the criteria for studying and measuring usability of websites are defined. For receiving valid and up-to-date information of how Go:group's customers perceive usability of websites implemented by the company, a survey to the company's customers was executed. The results of the survey were analysed and based on the results and research findings, recommendations of how the company can improve their operations and the end product to satisfy their customers even more were presented.

Go:group's benefits from this thesis are receiving important feedback from their customers as well as the findings and recommendations, which will improve the company's processes and therefore also customer satisfaction. The company's customers' benefit from this work is a more effective fulfilment of their needs. By making the websites more usable for the customers, the time used for updating and changing the content or layout of the website can be reduced and therefore the customers' operations become more efficient.

2.2 Research problem and objectives

The objective of this study is to target the aspects effecting usability of websites implemented with open source publishing platform WordPress and to receive valid information about the topic from the customers of Go:group. Based on the research findings and responses from the clients, the case company is given recommendations for improving their processes and therefore improving customer satisfaction. Thus the research problem is: How do the customers of Go:group perceive the usability of websites implemented with open source publishing platform WordPress?

In order to discover the right aspects from the research findings and to find the correct usability measurements criteria, the following questions and objectives are answered in the theoretical part of this study:

- What is usability?
- What are the components of usability and how do they affect usability?
- What does the usability of websites include?
- What are websites and what do they consist of?
- What are the website management tasks and how are they managed?
- What is WordPress and how are websites implemented with it?
- What are the criteria for measuring the usability of the websites and how can usability be measured?

For receiving relevant information from the customers of Go:group and for providing valuable recommendations for the case company, the following objectives are set in the empirical part:

- What are the customers' purpose and goals for using the website?
- Do the customers of Go:group know how to use the websites implemented with WordPress?
- Are the customers satisfied with the usability of websites planned and implemented by the case company?
- What are the aspects that the customers appreciate in the websites and what should be improved?
- How can Go:group improve their processes and as a result customer satisfaction?

2.3 Conceptual framework

For measuring usability it is necessary to identify goals and their sub goals as well as to differentiate usability measures and the components of the context of use with measurable attributes. Since this study is concentrated on the user of the website, who is the person maintaining and updating the site, the viewer of the website, who is the end user of the site, is not the object of this study but is still included in the

conceptual framework to demonstrate the difference to the user of the website. (ISO 9241-11 1998, 3.)

The conceptual framework of this thesis can be seen below in figure 1.

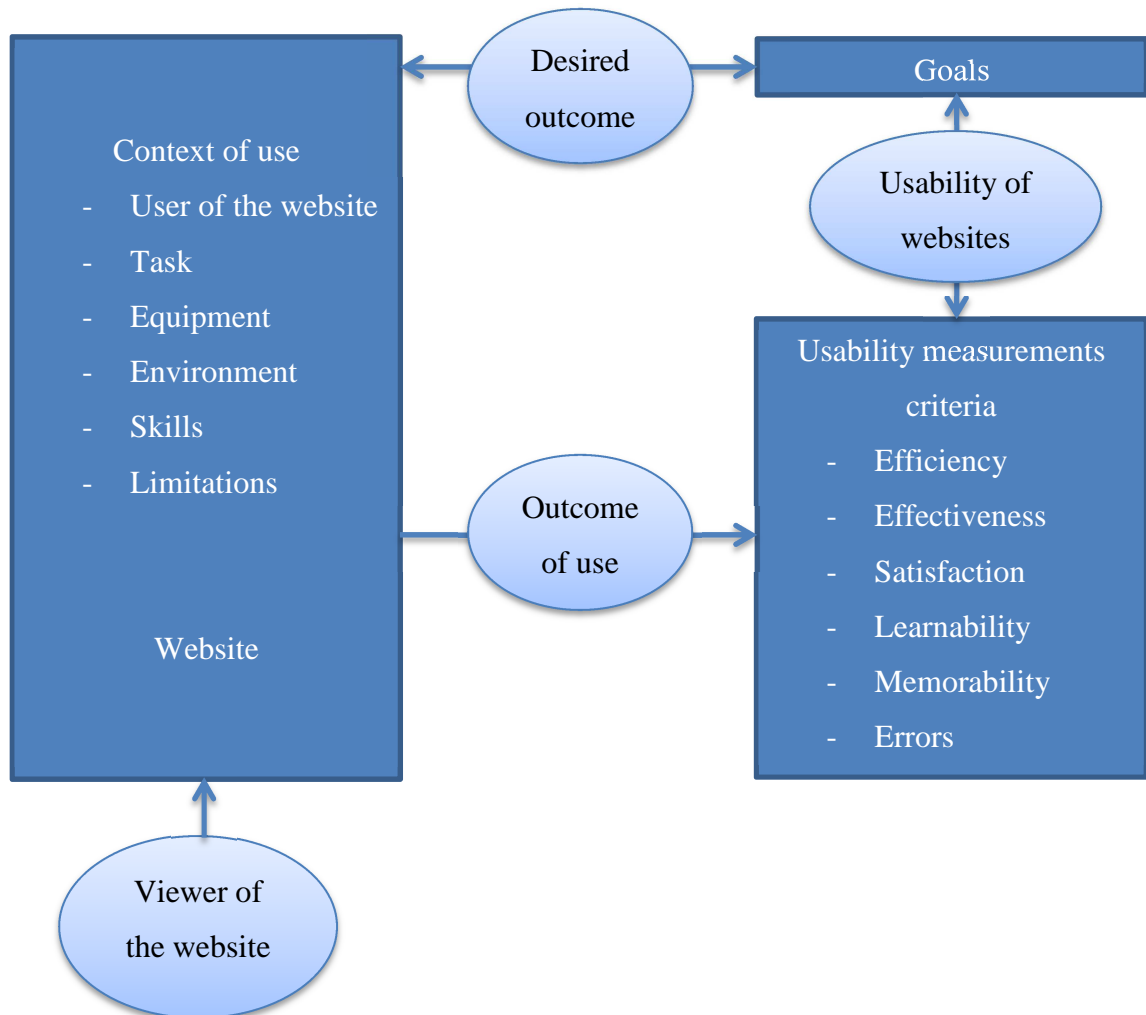


Figure 1. Conceptual framework of the study; measuring usability of websites. Modified version of the framework for specifying usability from ISO 9241-11 1998, 3

The goals of the website's user affect usability because usability can be defined as the extent to which goals are achieved with efficiency, effectiveness, satisfaction, learnability, memorability and errors. So the usability measurements criteria and the desired goals for using the site are linked because usability of the website can be defined through them. The context of use and the website itself affect the outcome of use and therefore have a significant influence on usability, which can be measured

through the usability measurements criteria. The goals and context of use are also linked with each other due to the fact that they both affect the desired outcome of using the website. (ISO 9241-11 1998, 3.)

2.4 Boundaries and limitations

In this study the term usability is used rather than similar terms accessibility, functionality, utility or quality. Some of the terms supplement the definitions but usability is the main concept of the studies. Usability is defined clearly through several definitions and sources for clarifying the addressed term used in this study.

In addition to websites, Go:group also implements web stores using eCommerce software and platform Magento. However in this study usability is studied from the point of view of only websites implemented with WordPress in order to study the aspects of usability in this particular open source publishing platform.

In this thesis the user of a website is referred to as the person maintaining and updating the site which in this case means the case company's customers. Go:group's customers' customers are the final users of the websites and usability could be studied through them as well. However in this thesis usability is addressed from the point of view of maintaining and updating the websites rather than viewing the implemented website, to be able to analyze the usability of the WordPress publishing platform. The end users of the website are referred to as the viewers of the website but they are not the object of this study.

3 GO:GROUP OY

The case company of this study is a full service digital agency Go:group. The company provides different kinds of web services and consultation to other companies according to the clients' needs. They design and plan tailor-made internet services to their clients. The company emphasizes the importance of business benefits in every

project that they make. The company's employees have strong technical know-how in web services and they can create visually impressive websites as well as professional corporate videos. In addition they offer web marketing to increase suitable visitor flow to websites. Go:group also provides services in social media so that their customers will receive visibility and the best benefits in business. The office of Go:group is located in Helsinki, Finland. (Website of Go:group 2014.)

Go:group's operations are up-to-date, innovative and trendy. The company was established by two professionals in the field of business, sales and technical expertise. The company is continuously growing and receiving more awareness and market share in the field of business. Some of their main clients are Novago Oy, Rähinä Records Oy and Abbott Oy. (Website of Go:group 2014.)

The digital service industry in which Go:group operates consists of different web services from creating websites to search engine optimization and marketing, as well as social media services. The industry area also includes creating entirely new content by copywriters according to the customers' needs. Executing professional and high quality corporate videos is an addition to the industry area of web services. The industry of digital services is constantly developing and expanding at high speed, resulting in increasing competition. Therefore competitive advantage has a big role in this industry area. Go:group's strategy is to concentrate on excellent customer service and high class end products in order to create an outstanding image among customers. (Website of Go:group 2014.)

4 USABILITY

4.1 Definition of usability

Usability is a quality of a product which can be a website, computer program or some other object, ensuring that users can use the product. Usability is part of the usefulness, use and user experiences (UX) of a product and it can be defined as a quality attribute or capability of a product that defines how easy and pleasant the user

interfaces (UI) are to use. UX refers to all aspects of user's interaction with a product, application or system, whereas UI means the manners in which a person uses and controls a software application or hardware device. A satisfying UI allows the user to interact with the software or hardware in a natural and intuitive way, giving a user-friendly experience. Term usability can be defined as the amount to which a product can be used by its users to achieve desired goals with effectiveness, efficiency, satisfaction and productivity in a context of use. In addition usability is comprised of learnability of the situation, faultlessness and memorability of the product. (ISO 9241-11 1998, 2-19; Nielsen 2000, 8-10; Sinkkonen, Kuoppala, Parkkinen & Vastamäki 2006, 11 & 212; Tullis & Albert 2008, 4; 11 & 212; Chaffey 2009, 625-627; Website of Nielsen Norman Group 2012.)

Usability as a software quality can be defined as characteristics of software, which bear on the effort needed for use and evaluation of use by the users of the product. Usability is dependent on the use situation because the characteristics of a product depend on the nature of the user, as well as the task and environment. So a product can be used in a specified context but it has no inherent usability. Usability considers user in human-computer interaction (HCI) as a human with an independent will. HCI addresses design, assessment and implementation of interactive computer and information systems. Usability of a product needs to be created through product design and it is an approach to product development incorporating feedback and meeting users' needs. Usability engineering aims to make products more user-friendly and the interface between user and product more pleasant and efficient. It consists of methods for improving and evaluating ease-of-use throughout the design process. (ISO 9241-11 1998, 2-19; ; Nielsen 2000, 8-10; Sinkkonen, Kuoppala, Parkkinen & Vastamäki 2006, 11; Krug 2006, 10; Chaffey 2009, 625-627; Website of Nielsen Norman Group 2012.)

ISO standards define usability differently but still complementary since ISO/IEC 9126-1 uses the term quality instead of usability and ISO/IEC 9126 defines usability as one element of software quality. ISO 9241-11 defines usability and quality as measurable design objectives which enable the product to meet the user's needs. So usability is the ability of the software product to be learned and understood when easily used under specified conditions. The design characteristics of the usable prod-

uct need to be taken into account so the product should also be attractive to the user. (ISO 9241-11 1998, 2-19; Bevan 2006, 7.)

Below in table 1 the definitions of usability used in the ISO standards have been clarified.

Table 1. Definitions of usability from ISO standards

Standard	ISO/IEC 9126-1	ISO 9241-11
Definition of usability	“The capability of the software product to be understood, learned, used and attractive to the user, when used under specified conditions” (ISO/IEC 9126-1 2001).	“The extent to which a product can be used by specified users to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of use” (ISO 9241-11 1998, 2).

4.2 Components of usability

The components for measuring usability in the context of this research are the actual using of a website, goals of using the website, usability measurements criteria and the website itself. Any component of the context of use can be evaluated and manipulated in order to change the usability of a product. Before measuring usability the goals need to be identified. Usability measures as well as the features of the context of use need to be divided into sub-features which can be measured. The components of usability and the relationships between them have been demonstrated in figure 1 as the conceptual framework. (ISO 9241-11 1998, 3-19.)

4.2.1 Context of using websites

User of the website

The usability of websites depends on the user of the site because every user is different and possesses different thoughts and ideas, therefore using products in different ways. There might also be several users from which some might be primary and others secondary or indirect users. People designing the websites have different working environments, work experiences and training than the users of the sites. For those reasons the product designers should know their customers well. (ISO 9241-11 1998, 8; Sinkkonen, Kuoppala, Parkkinen & Vastamäki 2006, 14-33.)

Task

The basic requirement for every product is that it is suitable for performing tasks it was designed to complete. The task the product was designed for affects the site's usability because the user should be able to perform that task. Tasks can vary significantly in frequency of use, duration, flexibility, dependencies, demands and the task output. (ISO 9241-11 1998, 8; Sinkkonen, Kuoppala, Parkkinen & Vastamäki 2006, 14-17; Chaffey 2009, 200; Website of Nielsen Norman Group 2014.)

Equipment

The equipment for using websites has an impact on the usability of the sites. Equipment includes the hardware, software, materials and services used for the product. If the website is used with an old or small screen computer or a mobile device, the product might feel less usable than with a high-tech computer with big screen. On the other hand if the computer is too difficult to use it results to the feeling of unusable product as well. In addition a slow or unstable internet connection makes the use of the website more difficult. (ISO 9241-11 1998, 8; Sinkkonen, Kuoppala, Parkkinen & Vastamäki 2006, 14-17; Chaffey 2009, 200.)

Environment

The organizational, physical and technical environments are factors affecting usability in the context of using websites. The environment of using a product is really wide and it includes the user's workspace, job, people, relationships, feelings, used time and habits. Working in a multi-tasking or interruptive environment can make

completing tasks difficult. The use environment as well as goals should correspond with the user's ideas of the product in order to maximize the usability of the product. (ISO 9241-11 1998, 8; Sinkkonen, Kuoppala, Parkkinen & Vastamäki 2006, 14-17 & 145; Chaffey 2009, 200.)

Skills and knowledge

Skills as well as previous experience and knowledge of the user give the basis for achieving usability. When learning, the new matters are kept in a person's memory as skills and knowledge. The meaningfulness of learned skills and knowledge increase when the learning is transferred to other contexts and situations. The knowledge of a user can be described as mental models which represent the structures and working of products. These models can be used in new use situations to explain the functioning of a product. If the mental models are incorrect or vary from the designer's model, the product will not be as usable as it was planned to be. (Sinkkonen, Kuoppala, Parkkinen & Vastamäki 2006, 14-17 & 177-196; Chaffey 2009, 200.)

Limitations

Limitations of use mean lack of mandates or features of the product resulting in the need for using another product. Both abilities and limitations generate the use environment. Equipment can also create limitations for usability if it does not support the use or visibility of the product. Users' disabilities can generate limitations for the user and they should be taken into account already in the design process as creating tailor-made products. Limitations are related to accessibility, because it means how effectively the user with disabilities or limitations can use a website. So accessibility can be defined as usability for specified users. (Nielsen 2000, 298-311; Sinkkonen, Kuoppala, Parkkinen & Vastamäki 2006, 14-17 & 120; Tullis & Albert 2008, 227; Chaffey 2009, 200.)

4.2.2 Goals of using websites

Goal means wanting to achieve a target on a higher level. Goals for the website reflect the needs and desires of the site's user. Usability goals address task completion,

time, accuracy and satisfaction (Tullis & Alber 2008, 206-207). The goals can be divided into smaller sub goals, with their own hierarchy and priority, which lead to achieving the wanted goals. Specific goals which are different from the way the user is used to handle related issues than the requirements of the product decrease usability. The layout of the website's interface components should be based on the user's goals and tasks. Using a website is not a goal but a method to reach the goal. Therefore the website designer should know the goals of the website's user and clarify the sub goals towards which every stage and window selection takes the user. (Sinkkonen, Kuoppala, Parkkinen & Vastamäki 2006, 25-36; Sweeney 2011, 2-5.)

Goals can be measured through the user performance and satisfaction. The fulfillment of goals can be determined through evaluation of feedback. The feedback can include internal feedback, meaning the user's own evaluation of actions, and external feedback, such as the website's viewer's feedback of the site. Constructive feedback takes the user closer to the goal whereas negative feedback results into ending the action. Lack of feedback on the other hand means that the user will repeat the same erroneous actions and the goals might not be achieved. In addition to feedback, goal conversions can be used to measure the fulfillment of objectives. Conversion is the completion of an action on a website that is important to the success of the company. (Sinkkonen, Kuoppala, Parkkinen & Vastamäki 2006, 39; Tullis & Albert 2008, 47; Website of Google 2014.)

4.3 Standards of usability

Standards of usability can be categorized as the user performance, product, implementing it and the life cycle processes of usability. The use of the product should be effective and efficient in order to achieve satisfied user performance. The user performance is affected by the user interface and interaction of the product. The third step of usability standards is the implementation and development of the product which should be user centered. The last step of the usability standards is life cycle processes which is the organizational capability of applying the user-centered design. (Bevan 2006, 1-2; Tullis & Albert 2008; 47.)

Below in figure 2 the relationships between the standards effecting usability have been demonstrated.

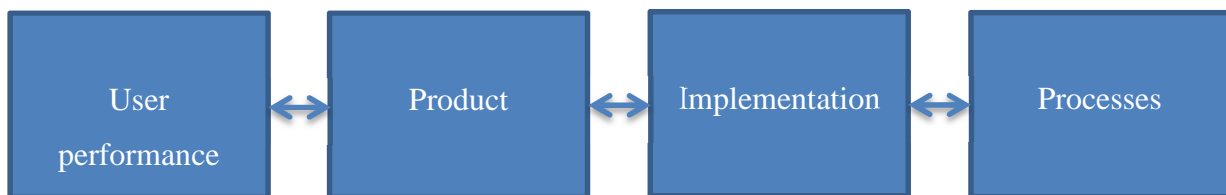


Figure 2. Approaches to achieving usability. Modified version from Bevan 2006, 2

4.4 Usability of websites

A website needs to be usable in order for the user to have satisfying user experiences. Designing usable websites for several users is a challenging task due to the fact that every user has different skills, abilities and thoughts. Therefore the usability practice demands research and paying attention to the sites' users' needs. Having different modes of products for novice and expert users is one option for satisfying use experiences. The management and use of suitable design techniques are important when designing websites. Approximately 10 percent of a design project's budget should be used on usability in order to improve websites' desired quality metrics. (Sinkkonen, Kuoppala, Parkkinen & Vastamäki 2006, 2-22 & 145; Tullis & Albert 2008, 9; Website of Nielsen Norman Group 2012) Investing in usability of products results into good return on investment (ROI), because usable products decrease time used to perform tasks therefore increasing productivity and reducing costs. (Bias & Mayhew 2005, 18-33; Tullis & Albert 2008, 9 & 231.)

If a website does not meet the needs of the site's user, the needs of the company providing the website will not be fulfilled either. Website development should be user-centred and the site's design should be evaluated against user requirements in order to have usable websites. In addition to user interface, the user-centred design and usability are affected by the context of use, meaning computer, workplace and environment. (Noyes & Baber 1999, 148; Bevan 2001, 1-2; Bevan 2003, 1; Bevan 2006, 42-43; Chaffey 2009, 623)

Standards are cultural conventions of Web features, such as blue hyperlinks and well-known menu structures which are based on sensory physiology and perceptual psychology. Using standardized cascading style sheets (CSS) when designing website templates creates a standard look and feel of the site. Website standards enable more efficient site design, reduce site maintenance time and therefore increase usability for the user of the site. Standards are usually easier to use than new or variable solutions, but in case of a weak standard a more visual solution is more usable. Another reason for not using a standard feature can be the website's esthetical appearance. In addition the use of standards in websites depends on whether the goal is to create distinguishable and up-to-date or familiar and traditional sites. In general the contents of a website should include variables and the visual appearance such as typography, background and margins, should contain standards. The visual appearance of a website should be as efficient and usable as possible and the content should be clear and high-quality. From the point of view of usability, simplicity should be the goal of website design and it is important to find the balance between standards and conventions. (Nielsen 2000, 31-81; Bevan 2001, 3-5; Sinkkonen, Kuoppala, Parkkinen & Vastamäki 2006, 31-32; Chaffey 2009, 638-639 & 702; Sweeney 2011, 142.)

In order to maximize the usability of websites their cognitive load should be minimized. The cognitive load of a user interface comes from the mental resources needed to operate the system. People can process a limited amount of information at the same time and when exceeding that ability the user's performance suffers. If the website is filled with too much unnecessary information or it is difficult to use, the user of the website might not notice vital details. Therefore it takes longer time for the user to find and understand information and they might even not complete the task and might leave the website. Cookies can be used to increase websites' usability and to personalize the site for an individual user. Cookies identify individual users and their preferences from a database, making the use of a website faster and easier. (Nielsen 2000, 221 & 134-134; Chaffey 2009, 219-221; Website of Nielsen Norman Group 2012)

In a usable website its site navigation, layout, transactional systems, mapping and finding relevant information need to correspond to the user's needs. Navigation ena-

bles the user to reach the site's content and documents by clicking on links and images, but it is often a bottleneck when using websites. Navigation should tell the user where they are, where they have been and where they can go and it should be as easy and as fast as possible in order to have a usable website. Consistency in user interfaces, including structures of navigation methods, layout, pictures, text and style, increase the usability and user experience of products. Using regular and repeated grids on websites creates a rhythm of order which increases the effectiveness and therefore usability of the sites. Visual design can increase the use efficiency of a product by up to 20-40 %. On the contrary using jargon terminology, incorrect grammar or unfamiliar language in the final design and user interface of a website weakens the site's usability. Therefore everyday language and illustrated explanations of the use should be provided for the user of the website instead. (Nielsen 2000, 188-200 & 280; Bevan 2005, 3-8; Sinkkonen, Kuoppala, Parkkinen & Vastamäki 2006, 2-32 & 232; Chaffey 2009, 124 & 627-636.)

Elements of website design can be divided into three areas; the overall structure of the site, the layout of individual pages and the text and graphic content of each page. Well planned design elements such as meaningful links and images enhance usability of a website whereas misusing them the elements become a visual clutter and weaken usability. Most people already have visual models of using websites from their previous experiences so properly used labels and layouts can reduce the need of learning in order to update and maintain the website. Using pictures, redisplayed information and smart default values instead of text offloads tasks from the user. The more tasks are eliminated from the user the more time and resources are left for other areas of business. It is then a question of the website's user's goals and desires whether they want to maintain the website themselves or outsource the maintenance of the website entirely, therefore minimizing the resources and time used for the website. In case of outsourcing the training and expertise of the company's own employees can be reduced. (Nielsen 2000, 8 & 284; Chaffey 2009, 641-646; Website of Nielsen Norman Group 2012.)

5 WEBSITES

5.1 Meaning of websites

Website is a portal consisting of information in the form of text, images, sounds or videos which is stored on a server in digital form. All websites have an URL address that enables people to find the sites. Websites can be divided into categories based on their content and services. Types of websites are: search engine sites, such as Google, question and answer sites, such as Wiki answers, and social networking sites, such as Facebook. In addition many faculties, companies and individuals have their own websites or web stores. (Website of Techscio 2014.)

The purpose of websites is to offer information about a company's products and services, qualifications and qualities of a person or organization or any other content (Website of Digital Meaning 2012; Website of Nielsen Norman Group 2012).

5.2 Planning websites

A cheap website can usually be associated with low price and short delivery but it also often refers to poorly planned design, content, security and future development potential of the website. Free websites are usually developed abroad and the use of web hosting is required which often means minimal input as well as output in planning of the websites. (Website of Digital Meaning 2012.)

Many companies, including Go:group, plan tailor-made and personalized websites for their clients. Personalized websites stand out from other sites and by planning tailor-made sites the customers also receives personal service. Personalized websites typically become most usable when at the initial stage of the planning process the desire is to reduce excess information and the site's categories are based on research information. In addition the user's part in the personalization process should be easy but still have the possibility to have an impact during the planning process. (Sinkkonen, Kuoppala, Parkkinen & Vastamäki 2006, 18; Sweeney 2011, 11.)

5.3 Implementing websites

Implementing a website is a crucial part of the process of a website because a badly coded website can generally not be repaired afterwards but the process will have to be restarted. A poorly implemented website will most likely lead to the user of the website to want a different website anyhow. A well implemented website should give the user an excellent user experience instead of a feeling of a mass produced website template which is sourced with the lowest price by an indifferent company. (Website of Digital Meaning 2012.)

A well planned and implemented website will probably cost at least double the cost of a cheap website but in return the website will have a modern design, designer customization and search engine optimization (SEO). SEO refers to actions aimed to improve rankings of a website in search engines' lists when using specific keywords. So it is necessary to invest in implementing websites in order to receive high-quality websites and desired result in business. (Website of Digital Meaning 2012; Website of Google 2014.)

5.4 Website management and tasks

Webmaster is the person responsible for maintaining websites. There is a clear difference between being in control versus having control of a website. Having control of a website means to have a login to the web hosting account, domain and to the website's content management system (CMS). A CMS can be defined as software which enables organizing and managing the web content. WordPress is an open source software that can easily be used as a content management system to run a website. On the other hand being in control of a website means having control of a website but in addition it means that the user of a website is aware of the content in the site, possible threats and attacks towards the site and the condition of files and database. Having full administration access to the website does not mean that the user of the site is fully in control of the site. Although many companies manage their websites internally there are different hosting options and providers for maintaining websites. In the hosting of websites the company needs to consider how much re-

sources they are willing to invest themselves or would an external hosting alternative suit their needs better. (Chaffey 2009, 110-111; Website of Digital Meaning 2012.)

Maintaining websites requires the capability to modify the software. Site modifications can include improvements, corrections or adaptations to the environment. It is recommended to create a maintenance plan which helps to perform the website chores when needed. Website tasks include checking updates to plugins, which are software components that add specific feature to software application, checking content management system core and 404 error “Page not found” logs for attacks and checking broken links across the site. One of the tasks is monitoring the internet protocol (IP) addresses which are persistent to 404 errors. The tasks also include creating server-side 301 redirects if needed to change the uniform resource identifier (URL) of the site shown in search engine results. Backing up an entire site or correspondingly checking for automatic backups is also needed in website management. (Bevan 2001, 6; ISO/IEC 9126-1 2001, 10; Chaffey 2009, 681; Skills Creator 2010, 62-63; Website of Digital Meaning 2012; Website of Google 2014; Website of Microsoft Office 2014.)

In addition website management tasks contain optimizing and cleaning the database, removing spam, making updates to the site’s content or blog posts and responding to comments. Linking older posts to new ones or just adding internal links to older posts is another website management task for the user of the website. Maintaining a website including a blog requires frequent management and the time needed for updates is often underestimated. Adding the most recent and important social media services and retesting email and contact forms have increased their importance in website management. Updating onsite ads, dated images and custom designed social media icons also belong to the website chores. Changing the website’s title, description and copy keywords excluding metadata keywords as well as changing Flash videos for HTML5 or the up-to-date trend is as well part of website management. Lastly repairing small cascading style sheet (CSS) bugs for latest browsers is also one website management task. (Sweeney 2011, 207-211; Website of WordPress 2002; Skills Creator 2010, 62-63; Website of Digital Meaning 2012; Website of Microsoft Office 2014.)

5.5 Website management criteria

It can be difficult to decide how to prioritize the tasks in website management but the maintenance plan should be created according to the needs of the website and the business plan of a company. Criteria to help to decide the priorities in website management can be defined. Security is a crucial criterion due to the fact that all websites receive attack attempts. Approximately 25 percent of daily traffic to websites is non-human including bad bots, which are software applications running computerized chores over the internet, searching for weaknesses or posting spam. If a website receives a successful hacking attack it might fall into search engines', such as Google's, blacklist meaning that the visitors of the website will receive a warning even weeks after securing the website. Companies that have websites should have an information security management system which can be developed internally or by adopting an external information security policy. (Chaffey 2009, 39 & 652-660; Sweeney 2011, 132-136; Website of Digital Meaning 2012.)

Another driver in website management is the frequent changing of search engine optimization algorithms. SEO defines the websites' ranking of search results and therefore it is important to update the keywords of the site. Google also favors recent and relevant content of websites so editing and maintaining the site keeps it current and on top of the search results. Even though the usability of a website attempts to make the maintenance of the site easy for the user of the website, pleasing the viewers of the website is also one objective of a well-designed website's outcome. In addition to changing the structure and layout of the website, altering the banner or content of a slideshow frequently adds variation to the site. Adding and varying a teaser bar, which leads to another part of the site such as a blog, displays that the website is being updated. A company's newest and relevant social media posts show dedication and a cutting edge to the customers, so enough time for maintaining the site should be organized by the user of the site. (Website of Digital Meaning 2012; Website of Google 2014.)

When maintaining the website the webmaster should keep in mind what the viewer of the websites wants. In general people visiting websites want high-quality, unique and frequently updated content, minimal download time as well as ease of use in the

site. Website management does not have to be necessarily done every week because the need for managing and maintaining the website depends on the website and the desired goals for it. The amount of pages and posts on the website defines the frequency of checking the site's links and comparably the amount of non-human traffic defines the frequency of checking the site's security. In case of receiving numerous comments on a daily basis the spam comments should also be checked often. Small and average sized websites can generally be checked once a week during the first month and after that once a month. In contrast a large website consisting of several blog posts should be maintained on a weekly if not daily basis. However websites' blogs should be maintained and updated on a weekly basis or even several times per week. (Nielsen 2000, 380; Sweeney 2011, 210-211; Website of Digital Meaning 2012.)

5.6 Websites implemented with WordPress

WordPress is customizable web software which enables the creation of easy to use websites and blogs through an open source publishing platform. Different plugins, widgets and themes are available for transforming the site through the software. It is an open source project meaning that hundreds of people are working on it globally and it can be used without license payments. Over 600 million people are using WordPress as the platform of their website. WordPress.org allows downloading or installing the WordPress software script. Only a web host which meets the requirements is needed. (Website of WordPress 2014; Website of WP-opas 2014.)

Websites implemented with WordPress also contain the platform for a blog which is a type of website that is often maintained with frequent comments, descriptions and graphics or video. WordPress actually started as a blogging system but has evolved into a full content management system. WordPress.com lets the user to start a free WordPress-based blog immediately but is not as flexible as the WordPress which is downloaded and installed by the user. The blogging platform of WordPress is easy to use and due to wizards for creating the blog, the blog can be up and running in a short time. WordPress is one of the most popular blogging platforms in addition to

Blogger. (Sweeney 2011, 207; Website of Blogger 2014; Website of WordPress 2014.)

6 MEASURING USABILITY

6.1 Usability measurements criteria

When developing and designing a product, the users, their goals and needs, the place of use, actions of use and the demands which these aspects place on the usability of the product need to be known. A typical measure of testing usability is user performance and the main usability requirements are usually learnability and efficiency of use in addition to pleasantness of use. Other important usability requirements include effectiveness, memorability and errors made using the product. By studying these measures through testing the usability of a website can be measured. The product should be suitable for the task it was designed to carry out but due to the self-evidence of this aspect it is often not included in the usability requirements. Even so it should be taken into account if the product fails to achieve its suitability for the task. (Nielsen 2000, 274; Sinkkonen, Kuoppala, Parkkinen & Vastamäki 2006, 9; Tullis & Albert 2008, 47; Website of Nielsen Norman Group 2012.)

6.1.1 Efficiency and productivity

Efficiency is the amount of cognitive and physical effort required to complete tasks by the user of the website (Tullis & Albert 2008, 87). Efficiency of a product is the capability of software to provide required performance, relative to the used resources which are in relation to the accuracy and completeness of achieving goals. Efficiency of a website can be measured by the time and accuracy used to perform tasks and relearning matters. In addition to the time used to complete a particular job, the number of clicks needed for completing the tasks should be taken into account in the usability of websites. Efficient perception of interface elements is created by information grouping and hierarchy that offers meaningful entities to the user. The use

efficiency of a product is most efficient when there are no errors and the use is faultless. However this is often not possible so the use efficiency can be improved through short and clear error messages. If the communication between user and the product is optimized and the errors can be repaired as simply and fast as possible, the efficiency of the product increases. (ISO 9241-11 1998, 2; Bevan 1999, 5; Sinkkonen, Kuoppala, Parkkinen & Vastamäki 2006, 13-43 & 143-144; Nielsen 2000, 202; Chaffey 2009, 627; Website of Nielsen Norman Group 2012.)

The ability to make quick decisions defines the productivity of a task. Productivity of a product can be measured by how many functions the user has learned and how many users have performed the tasks. When using a product on a daily basis the user becomes experienced so the efficiency of navigating and working in the website determines the productivity of use. Due to the fact that usable products increase productivity investments in usability engineering should be made. (ISO 9241-11 1998, 2; Nielsen 2000, 274; Sinkkonen, Kuoppala, Parkkinen & Vastamäki 2006, 193; Website of Nielsen Norman Group 2012.)

6.1.2 Effectiveness

Effectiveness means the accuracy and completeness of users achieving specified goals. Effectiveness of websites can be evaluated through task completion and success. In an effective website users should be able to complete tasks correctly and completely. This can be measured based on how often the user of the site is able to complete tasks and find information. Effectiveness can be improved by measuring and evaluating the performance of the website's user. When analysing the working and performance in the site the user has the opportunity to learn from the past mistakes and therefore improve effectiveness. When measuring the effectiveness of a website only one element should be evaluated, and if necessary, changed at a time. When making several changes at the same time it will be difficult to estimate the effect on the changes to the site's effectiveness. (ISO 9241-11 1998, 2; Tullis & Albert 2008, 8 & 64; Chaffey 2009, 627; Sweeney 2011, 136 & 297; Website of Nielsen Norman Group 2012.)

6.1.3 Satisfaction and pleasantness

Satisfaction can be defined by how pleasurable the design is for the user (Website of Nielsen Norman Group 2012). Satisfaction is the degree to which the user of a product is happy with the user experience when performing tasks. As usability metric, satisfaction has many different aspects including the visual appearance of a product, expectations and the ease of use. A product is satisfactory to use when there is no discomfort or negative attitudes towards the use of the product. Tasks performed with the product should be each time more satisfying to complete with the product than without. Satisfaction can be measured by how satisfied the users are with the interaction of the product. (ISO 9241-11 1998, 2; Sinkkonen, Kuoppala, Parkkinen & Vastamäki 2006, Tullis & Albert 2008, 8 & 47; 13-33; Chaffey 2009, 627.)

Pleasantness is measured by how easily the user learns to use the product. The ability to productive, efficient and faultless working leads to pleasurable use of a product. When the product creates an unpleasant feeling in the use situation the user will start to avoid using the product. In order to have a pleasant user experience data in the website should be usable meaning that reasonable amount of data should be available with a reasonable amount of effort. The product should also consist of an esthetically pleasing experience which needs to be created during the product design process. (ISO 9241-11 1998, 2; Sinkkonen, Kuoppala, Parkkinen & Vastamäki 2006, 13-33 & 193.)

6.1.4 Learnability

Learnability is the extent of learning comprising the time needed to become capable of performing tasks and to achieve the maximum efficiency (Tullis & Albert 2008, 47-51). Learning can be defined as a change in knowledge and behavior or as a process of forming new mental models or images and applying them in practice. It includes memorizing new information, developing skills, experiencing and gaining new understanding. Performance changes can be measured through learnability. Learning on a semantic level, where the content properties of a product are described by repetition, is difficult without understanding the syntactic level of the product.

The syntactic level explains how the tasks and structures, such as the screens' visual appearance or the use of a keyboard, are executed as well as the relationship between the input and feedback. As feedback is needed for evaluation of goals and error rectifying it is also a requirement for learning. In order to make errors into learning opportunities the user needs to understand the reason for the made errors. (Sinkkonen, Kuoppala, Parkkinen & Vastamäki 2006, 37-43 & 193-198; Tullis & Albert 2008, 64.)

In addition to being taught users can learn to use websites through reasoning, trying as well as reading manuals and instructions. Learning meaningful wholes with significance is much faster than learning something insignificant. Culture can be learned through interaction with other people as well as through using objects such as the Web. In addition to culture learnability depends on the generation and age of the user. Young people tend to learn fast and use computers quicker than the elderly. Older people often do not want to bother the designers for more usable products but simply stop using the products completely. Learnability of new skills might have decreased due to lack of communication, motivation and time or because of earlier unpleasant memories related to similar area. Previous knowledge and experiences have a great impact on the ease of learning new matters and it can vary considerably depending on the person. In addition to learned heritage cultures also the learned use cultures within the context of user interface, such as web culture and graphical user interface (GUI) culture, give a foundation of learning new aspects of websites. Consequently these cultures should be taken into consideration in the planning process of new products. (Sinkkonen, Kuoppala, Parkkinen & Vastamäki 2006, 15-30 & 203-204)

Learnability as a quality component of usability means how easy it is for users to complete tasks when they use the design for the first time (Website of Nielsen Norman Group 2012). Most products require learning but the ease and the time needed for it can vary. Learnability can be measured through productivity, efficiency and pleasantness of the product. Human computer interaction supports learning when it guides the user in learning the system and recommends the designers to study different learning strategies. Learnability is one of the central aspects of usability, so when planning new products the product designers should keep in mind the customer's point of view and expertise of the product because it will probably differ from the

designer's former knowledge. Users learn different aspects through the tasks they complete than the designers who developed the product. Developing a product that is easy to learn requires repetition in the design process and observing the users until the product meets the requirements and the users' needs. Using consistent and uniform product terminology and functions and a clear structure, results into an easy to learn interface. (ISO 9241-11 1998, 2-19; Sinkkonen, Kuoppala, Parkkinen & Vastamäki 2006, 9-21 & 193; Tullis & Albert 2008, 92-93.)

6.1.5 Memorability

Human memory can be divided into three parts; sensory, working and long-term memories. Sensory memory uses its short-term memory register to create a perception of continuity. The sensory input enables a human to see a progressive movie when showing series of static images. Working memory is the part where information is stored for a short period of time by repetition. It is a person's active mind but it is also the bottleneck of information processing because the capacity of a human memory for doing many activities simultaneously is quite poor. Long-term memory on the other hand is the storage of memories, knowledge and skills. In contrast to sensory or working memory, information stays in long-term memory and is not forgotten. In order to create comprehensive memories, different ways of processing and storing information are needed. (Sinkkonen, Kuoppala, Parkkinen & Vastamäki 2006, 149-156.)

Human as a machine model describes some functions of human memory. Generalized a human can be seen as similar to a computer that processes and stores data and tasks. In reality humans and their memory structures are substantially more complex than machines. Even though memory structures are similar with most people, memory content differs between individuals and cultures. Memories of different events, physiological and psychological structures, cultural features as well as conventions of operating in technological environments have an effect on the memorability of humans. (Sinkkonen, Kuoppala, Parkkinen & Vastamäki 2006, 14-27.)

From the point of view of usability, memorability describes how easily users can return to the ability to perform tasks after period of a time of not using the design (Website of Nielsen Norman Group 2012). Memorability can be measured by how much the user remembers about the task completion of a product. The human memory works unpredictably but recognizing matters is much easier than remembering them. Also remembering something personally significant is easier than memorizing insignificant matters. The user of a website needs to remember different information before being able to use the site. Humans use all available information in the use environment in order to reduce the data that they need to remember. The information can include people, databases, the Web, manuals, site elements or navigational equipment. The more similar the analogy of a website's menu hierarchy of navigational structure is to the information structure of the user's mind, the more usable the interface is. Incorrect memory, such as not remembering the correct spelling of a certain term, can result into unintentional errors. (Sinkkonen, Kuoppala, Parkinen & Vastamäki 2006, 33-38 & 147-157; Tullis & Albert 2008, 52.)

6.1.6 Errors and faultlessness

Errors can be measured by how many errors are made by the users, how bad the errors are and how easy it is to repair them (Website of Nielsen Norman Group 2012). When the user of a website acts differently than planned, two kinds of errors may occur; intentional mistakes and unintentional slips. An intentional error is result from an inefficient user-defined sub goal, which is caused by wrong information, action, generalization or assumption, or misinterpretation of the situation. An unintentional error on the other hand occurs when the situation is correctly interpreted with the right intention but the performed action is incorrect. The user's incorrect manual input or memory, associative replacement of words, common characteristics of habits and mode errors of the website can cause unintentional errors. Unintentional errors usually occur when the user has learned to use the product and the use is partially automatic. Slips are often easy to notice and repair, even though recovering from errors can sometimes take time. Although few errors and faultless use of a product are indications of a usable product, recovering from errors belong to goal-action-evaluation cycle and errors can teach the user to use the product in an improved way.

(Sinkkonen, Kuoppala, Parkkinen & Vastamäki 2006, 38; Tullis & Albert 2008, 47 & 64-82; Chaffey 2009, 656.)

Errors are incorrect actions that might cause task failures, therefore decreasing the productivity and efficiency of the user interface. When the amount of errors increase and the faultlessness of the product decrease the product needs to be improved or replaced with an entirely new system. In such case the buyer of the product needs to use additional resources of expenditure and time. In addition the reputation of the seller as well as the customer's trust decreases. As a result it is important to pay attention to the usability already in the design and planning stage of a product. (Sinkkonen, Kuoppala, Parkkinen & Vastamäki 2006, 13; Tullis & Albert 2008, 81.)

7 METHODOLOGY

7.1 Research means and measures

Based on the gathered theory a survey for collecting semi-structured interview feedback on usability of websites implemented with WordPress was created. Both structured and unstructured questions were asked in order to receive comprehensive answers from the respondents. Unstructured questions do not include alternative answers whereas structured questions list predefined options for responses. The survey was created to assess the context of use, goals and usability measures as perceived by the interviewed sample. In addition the respondents' view about outsourcing the maintenance of the websites was asked. (Alreck & Settle 1995, 44 & 105-106; Sinkkonen, Kuoppala, Parkkinen & Vastamäki 2006, 235-242.)

This study has both descriptive as well as explanatory goals but the main focus for the outcome is in the explanatory research design. The descriptive goal is to first profile the respondents by examining the context of using the website and the customers' goals. The explanatory goal is to then explain the respondents' actions by discovering relationships between the answers of usability measurements criteria. The explanatory research explains how the context of use and goals affect the features of

usability measurements criteria and the characteristics of usability. (Goodman, Kuniavsky & Moed 2012, 331.)

Usability metrics reveal aspects of users' personal experience when using products. They show the areas of products where users are facing usability problems or are likely to experience usability issues. All of the usable metrics need to be quantifiable, so the criteria of efficiency, effectiveness, satisfaction, learnability, memorability and errors need to be presented in a numeric format. That is why usability was chosen to be measured based on those criteria on Likert and semantic differential scales from 1 to 5. In addition background information of the websites' users was examined using open ended and yes/no questions. (Sinkkonen, Kuoppala, Parkkinen & Vastamäki 2006, 235-242; Tullis & Albert 2008, 8-9 & 124-125.) The participants were also provided a possibility to add additional comments to any of the questions (Tullis & Albert 2008, 162).

Based on the objectives and research questions of this thesis the independent variables of the usability study are the aspects that the customers appreciate in the websites and areas that should still be improved. The dependent variables are the metrics of the usability measurements criteria. Data from the usability metrics was collected in ordinal, interval and ratio data because different usability measurements criteria can be studied using different scales. Background information of the sites' users was collected also as nominal data because the order between categories is not needed. (Tullis & Albert 2008, 20-23.)

7.2 Research methods

The goal of usability measuring is to find out the aspects fulfilling usability of the websites as well as the weaknesses of the sites. The focus in usability testing is on the functionality of the websites in order to find out which design elements are difficult and which are easy to use. The aim is to find the areas where the user experience is not fulfilling the customers' needs. Different dimensions and research methods can be used in the same study to satisfy multiple research goals. The usability of websites implemented with open source publishing platform WordPress is measured in this

study through quantitative and qualitative research in addition to an attitudinal research approach. (Sinkkonen, Kuoppala, Parkkinen & Vastamäki 2006, 239-240; Rohrer 2009; Website of Nielsen Norman Group 2014.)

Quantitative research

Quantitative research answers to questions of how many and how much since it gathers data from large amount of people. In quantitative studies the data is gathered indirectly through an instrument such as a survey or a web server log. Due to large sample sizes data from quantitative research can be coded numerically and analyzed mathematically as summative approach. (Sinkkonen, Kuoppala, Parkkinen & Vastamäki 2006, 239-240; Rohrer 2009; Sauro & Lewis 2012; Website of Nielsen Norman Group 2014.)

Even though the sample size of this study was not very large (22), reliable information from usability tests can be received already by approximately five (5) users. Therefore it was possible to use quantitative research approach for studying and analyzing the research results in order to draw causal conclusions. In addition survey for collecting data was used in this study which is typical in quantitative research. (Sinkkonen, Kuoppala, Parkkinen & Vastamäki 2006, 5 & 236-242; Tullis & Albert 2008, 57 & 117-121; Website of Nielsen Norman Group 2012.)

Qualitative research

The purpose of a qualitative satisfaction test is to determine whether the product meets the usability requirements. The aim of qualitative test is to find usability problems by measuring the quality of the interface comparative to defined usability aims. Qualitative research answers to questions of why and how to repair a problem and the data is often collected directly from the respondents. The analysis of data from qualitative research is often formative and not mathematical. (Sinkkonen, Kuoppala, Parkkinen & Vastamäki 2006, 239-240; Rohrer 2009; Website of Nielsen Norman Group 2014.)

The qualitative testing method was chosen as one of the research approaches because the amount of the research sample was rather small. By comparing the use of the websites to the defined usability measurements criteria it is possible to find usability

issues. Data was also collected directly from the respondents by phone, which suits the qualitative research. (Sinkkonen, Kuoppala, Parkkinen & Vastamäki 2006, 239-240; Rohrer 2009; Website of Nielsen Norman Group 2014.)

Attitudinal research

The purpose of an attitudinal research is to understand, measure and to observe people's beliefs and changes in them. Surveys measure attitudes and often collect self-reported data that help to discover important issues on the website. Attitudinal research is concentrating on what people say rather than what people do which is the core of behavioral research. (Rohrer 2009; Goodman, Kuniavsky & Moed 2012, 331; Website of Nielsen Norman Group 2014.)

Attitudinal research was also selected as one of the approaches for this study because it answers to questions of the websites' users' satisfaction, preference and desire towards the site. Those areas answer especially to satisfaction and pleasantness as the usability measurement criteria. (Goodman, Kuniavsky & Moed 2012, 332-333.)

7.3 Population and sample

Reliable information from usability tests can be received already by a minimum of three (3) to four (4) users but generally it is recommended to test at least five (5) users in a usability study. For reliable trends in user behaviour having a bigger sample would be needed but even small target groups give a good idea of trends. Testing larger samples of 10-50 participants ensures more reliable data. Quantitative studies, card sorting and eye tracking techniques for measuring usability require more tested users than the qualitative tests. (Alreck & Settle 1995, 59-60; Sinkkonen, Kuoppala, Parkkinen & Vastamäki 2006, 5 & 236-242; Tullis & Albert 2008, 57 & 117-121; Website of Nielsen Norman Group 2012.)

For the usability test survey of this study there was a list of 35 companies to whom Go:group has implemented websites with WordPress to ensure receiving relevant data from the customers. The companies consist of different fields of business operating in the national as well as international markets. Most of the companies are

Finnish but one of them is operating in Sweden. The goal was to have 20-30 of Go:group's customers participating in the usability testing in order to receive reliable information from the responses. The sample goal was fulfilled since 22 of the companies answered to the survey. The people who gave the answers are the users of the websites, so they are qualified for answering to the questions. With the sample of 22 respondents in this case it was possible to estimate average perception of usability for the user population. (Tullis & Albert 2008, 117-121; Sauro & Lewis 2012, 274.)

7.4 Data collection and analysis

Since there was a rather small sample of participants for the study the survey was implemented by phone in order to receive immediate answers from the respondents. Executing the survey by phone was also the case company's suggestion. Gathering data directly also enabled to ask follow-up questions and to clarify answers. (Sinkkonen, Kuoppala, Parkkinen & Vastamäki 2006, 239-240; Rohrer 2009; Website of Nielsen Norman Group 2014.)

Having a semi-structured format for the interviews and predefined scales for most of the responses made it possible to make quantitative and statistical analysis of the feedback with some qualitative methods for the open-ended questions. Features of quantitative method, such as presenting graphs and percentages as well as counting correlations, means and group means were utilized to make the analysis of results easier, clearer and more demonstrative. The case company also wished to receive causal results. However these statistics should be interpreted with some caution and reservation because the number of respondents was only 22. Therefore features of both quantitative and qualitative methods have been used. The analysis of results enabled to draw conclusions and recommendations based on the feedback received from the customers of Go:group. (Alreck & Settle 1995, 44; Tullis & Albert 2008, 117-121; Sauro & Lewis 2012, 274-275.)

7.5 Creating the questionnaire

The purpose of the survey is to research the aspects effecting usability of websites implemented with open source publishing platform WordPress and to receive valid information about the topic from the customers of Go:group. The questionnaire is based on the gathered theory and the research objectives, so the questions were built to answer to the questions set for the empirical part of this study.

The first research objective for the empirical part is answered in the survey through the background information of the website's user's goals:

- What are the customers' purpose and goals for using the website?

The next objective is examined through usability measurements criteria learnability:

- Do the customers of Go:group know how to use the websites implemented with WordPress?

The usability measurements criteria satisfaction and pleasantness studies the following research objective:

- Are the customers satisfied with the usability of websites planned and implemented by the case company?

The following objective is measured through measurements criteria effectiveness in addition to aspects of efficiency and productivity, memorability as well as errors and faultlessness:

- What are the aspects that the customers appreciate in the websites and what should be improved?

The last research objective of this study is answered by examining basically all the questions of the survey:

- How can Go:group improve their processes and as a result customer satisfaction?

The survey was first created in English and after that the supervising teacher and the opponent gave comments on it. The case company approved the survey as it was,

stating that it measures usability in a comprehensive manner. The survey was then translated into Finnish and executed in Finnish for the Finnish companies and in English for the international companies. The survey can be seen in English as appendix 1 and in Finnish as appendix 2.

7.6 Validity and reliability

Since the survey was executed through phone the contact between the interviewer and the respondent was only audial. This created both physical as well as psychological challenges compared to personal interviewing. The mood and behavior of the respondent needed to be interpreted by the tone of voice and vocabulary. Correspondingly the respondents were not able to see visual material such as the rating scales. The psychological challenges are caused by the lack of eye contact and physical presence which can affect the respondents' attitude and cooperation. On the other hand conducting the survey through phone can increase cooperation because the respondents might feel greater anonymity resulting as confident and ease of answering to questions. (Alreck & Settle 1995, 33-34.)

The reliability of the data depends on the size of the sample obtained. Reliability means freedom from random error which can be measured through repeatability over time and respondents. Data cannot be more valid than it is reliable because the degree of reliability limits the degree of validity. Both validity and reliability of data should be centered because the effect of systematic bias is to push or pull the results in another specific direction. (Alreck & Settle 1995, 35 & 56-59.)

Since reliable results from the minimum of approximately five (5) users can be received from usability testing, the sample of 22 respondents in this study fulfills the requirements of reliability. There can also be seen some trends in the answers of the respondents' which tells about the validity of the research. Some of the questions could have been interpreted differently depending on the person but for that reason it was good to implement the survey by phone because then additional explanations and comments could be added. The reliability, validity and sensitivity of the data received from the survey have been analyzed in more detail based on the results of this

study in chapter 8.2. (Alreck & Settle 1995, 59-60; Sinkkonen, Kuoppala, Parkkinen & Vastamäki 2006, 5 & 236-242; Tullis & Albert 2008, 57 & 117-121; Website of Nielsen Norman Group 2012.)

8 RESEARCH FINDINGS

8.1 Presentation and analysis of the data

The data collected from the survey executed to the customers of Go:group gives a comprehensive outlook of the usability of websites executed with open source publishing platform WordPress. The survey is based on the theoretical part consisting of the context of using websites, the goals of the website's user, usability measurements criteria and due to wish of Go:group also outsourcing.

8.1.1 Context of use

User of the website

First of all the 22 respondents were asked whether there were several users of the website. 13 answered that they are the only user and nine (9) told that there are more than one (1) user maintaining and updating the website. In case of several users of the website there were five (5) respondents who told that there are more than two (2) users of the website. One of those five (5) users told that the website has been shut down due to termination of the company's operations but they were able to answer to the survey based on the time when the website existed and was being maintained and updated. Below in table 2.1 the percentages of the amount of users have been demonstrated.

Table 2.1. Users of the website (N=22)

1. Are there several users of the website?	
No	59 %
Yes, 2	18 %
Yes, more than 2	23 %

The objective of this study was to research the aspects effecting usability of websites implemented with WordPress. Since the user of the website has an effect on usability the responses of the amount of users were compared to the usability measurements criteria satisfaction and pleasantness. Question 16: “How user-friendly platform is WordPress in use?” and question 17 “How easy is it to maintain your website using WordPress?” were used in the comparison because they give a clear view on usability. The respondents find the platform rather user-friendly and easy to use because the average answer of the responses in each case is more than 3 on a scale from 1 (unusable) to 5 (usable). However it can be discovered that the more users of the website there are, the more user-friendly the respondents find the platform and the easier it is to maintain the website. Below in table 2.2 the average answers of the amount of users compared to how user-friendly and easy to use the platform is can be seen.

Table 2.2. Users of the website and usability (N=22)

1. Are there several users of the website?	16. How user-friendly platform is WordPress in use?	17. How easy is it to maintain your website using WordPress?
Yes / No If yes, how many?	1=Not at all user-friendly 5=Very user-friendly	1=Very difficult 5=Very easy
	In average	In average
No (13 responses)	3,23	3,54
Yes, 2 (4 responses)	3,38	3,38
Yes, more than 2 (5 responses)	3,60	3,80

Task

The task has an effect on usability so the update areas and tasks were examined through the survey. Three (3) of the respondents answered that they do not perform almost any maintenance or updating tasks in the website. The rest 19 respondents answered that they perform different tasks in the areas of content, graphics and social media.

The tasks in the area of content include updating current news and information (6 responses), product presentations (4 responses), text (3 responses), the company's services (2 responses), projects (1 response), personnel information including tasks and profiles (1 response), new customers (1 response) and recruiting advertisements (1 response). In addition one of the respondents answered that they update search engine optimization in their website. In the area of graphics the respondents answered that they update basic graphics on their site (3 responses), pictures (4 responses) and product pictures (1 response). The tasks in social media amongst the respondents include blog and Twitter. The website's blog was being updated by five (5) of the respondents but one (1) respondent replied that a blog was supposed to be included in the site but there was no administrator for it. Additionally one (1) respondent replied updating Twitter through the site.

The respondents who replied that they do not update or maintain the website felt that WordPress is not really user-friendly platform but that it is rather easy to maintain the website through the platform. On the other hand the respondents who regularly perform maintenance tasks felt that WordPress is rather user-friendly platform and that it is even easier to maintain the website using WordPress. The responses of the maintenance tasks can be seen below in table 3.

Table 3. Tasks performed and usability (N=22)

2. If/when you maintain the website what kind of areas do you update and which tasks do you perform?	16. How user-friendly platform is WordPress in use?	17. How easy is it to maintain your website using WordPress?
Blog, content, graphics	1=Not at all user-friendly 5=Very user-friendly	1=Very difficult 5=Very easy
	In average	In average
Do not maintain (3 responses)	2,67	3,33
Maintains (19 responses)	3,45	3,61

Equipment

The equipment, such as computer and internet connection, can increase or decrease the usability of the website. Therefore the respondents were asked to evaluate the quality of the equipment that they have for maintaining the website. On average the respondents' answers were on the positive side (3,8/5) on a scale from 1 as "poor" to 5 as "excellent". One (1) of the respondents answered that the quality of their computer corresponds to 2 but the internet connection can be evaluated as 4, so the average of those answers has been taken into account in the presentation of these results. The scale and answers have been demonstrated below in figure 3.

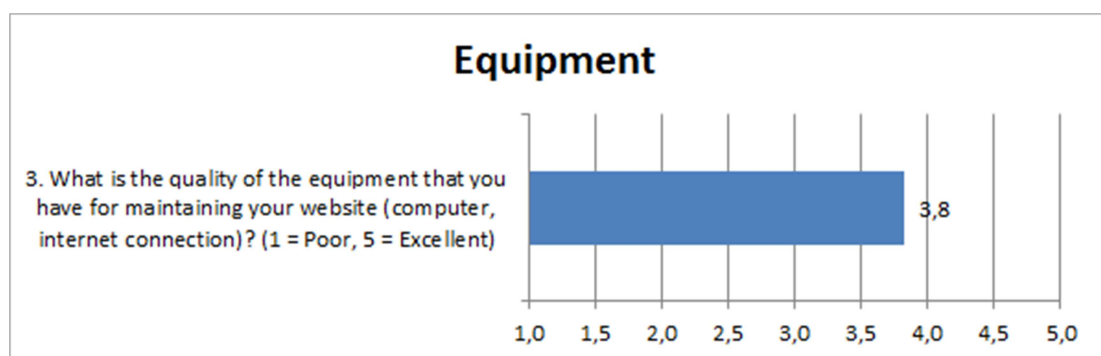


Figure 3. Equipment (N=22)

The variance of the shared variables; equipment and questions 16: "How user-friendly platform is WordPress in use?" and 17 "How easy is it to maintain your website using WordPress?" have been measured by counting their correlations using

the Microsoft Excel Correlation function. Even though quantitative research is not the only approach of this study, many features of it have been used especially in the analysis of the results to make the demonstration of the results easier and clearer. The case company also wished to receive some causal explanations of the results, so with correlation the relationships between some of the variables could be presented. The results of the correlation are between -1 and +1. If the correlation is 0 or near it there is no correlation between the particular variables. If the correlation is +1 or close to it there is strong correlation between the variables. On the other hand if the correlation is -1 there is inverse correlation between the variables. (Sauro & Lewis 2012, 269-270.)

The equipment has some correlation (0,37) with how user friendly platform WordPress is in use. However there is almost no correlation (0,08) between the equipment and how easy it is to maintain the website using WordPress. The results can be seen below in table 4.

Table 4. Quality of equipment and usability (N=22)

Correlation -1=Inverse correlation 0=No correlation +1=Strong correlation	16. How user-friendly platform is WordPress in use?	17. How easy is it to maintain your website using WordPress?
1=Poor 5=Excellent	1=Not at all user-friendly 5=Very user-friendly	1=Very difficult 5=Very easy
3. What is the quality of the equipment that you have for maintaining your website (computer, internet connection)?	0,37	0,08

Environment

As equipment has an effect on usability, so does the working environment in which the website is being used. The working environment is really comprehensive since it includes the workspace, coworkers and possible distractions of working. The respondents were asked to evaluate the quality of their working environment on the

same scale as the equipment and the average answer was better than the quality of the equipment. One (1) of the respondents answered that the quality of their working environment is 2 at the moment due to renovation of the working space but normally it can be evaluated as 4. In this study the answer of 4 has been taken into account since the renovation is only temporary and the answer of 2 does not match the long-term situation. The average answer of the quality of environment was 4,1/5 which can be seen below in figure 4.

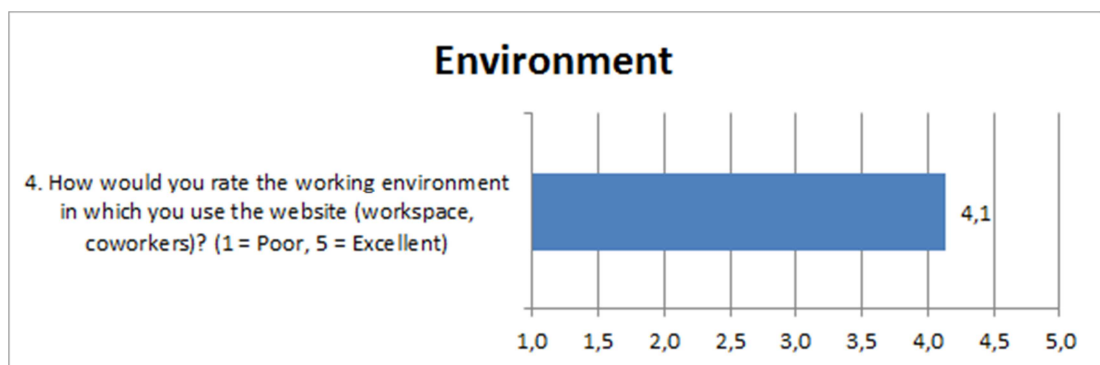


Figure 4. Environment (N=22)

As equipment, also environment has some correlation (0,36) with how user-friendly platform WordPress is in use. However there is practically no correlation (-0,05) with environment and how easy it is to maintain the website using WordPress. The results can be seen below in table 5.

Table 5. Working environment and usability (N=22)

Correlation -1=Inverse correlation 0=No correlation +1=Strong correlation	16. How user-friendly platform is WordPress in use?	17. How easy is it to maintain your website using WordPress?
1=Poor 5=Excellent	1=Not at all user-friendly 5=Very user-friendly	1=Very difficult 5=Very easy
4. How would you rate the working environment in which you use the website (workspace, coworkers)?	0,36	-0,05

Skills and knowledge

Since skills and previous experience and knowledge of the user give the basis for achieving usability, they were examined through two structured questions. The respondents were asked to evaluate their own IT-skills on the same scale as the quality of equipment and environment. The average answer was below the middle of the scale being only 2,8/5.

In addition the respondents were asked whether they had any previous knowledge or experience about WordPress or some other publishing platform on a scale from 1 as “not at all” to 5 as “very much”. The average answer of previous knowledge and experience was 1,9/5, which is even lower than the evaluation of the respondents’ IT-skills. 11 respondents had experience of a publishing platform and three (3) of those users had used WordPress previously. Most of the respondents did not remember the name of the other previous platform but the systems were mostly intranets or private platforms. All the respondents who had previous experience preferred WordPress and one (1) respondent said that open source content management system Drupal is also good. The answers as well as the average of skills and knowledge have been demonstrated below in figure 5.

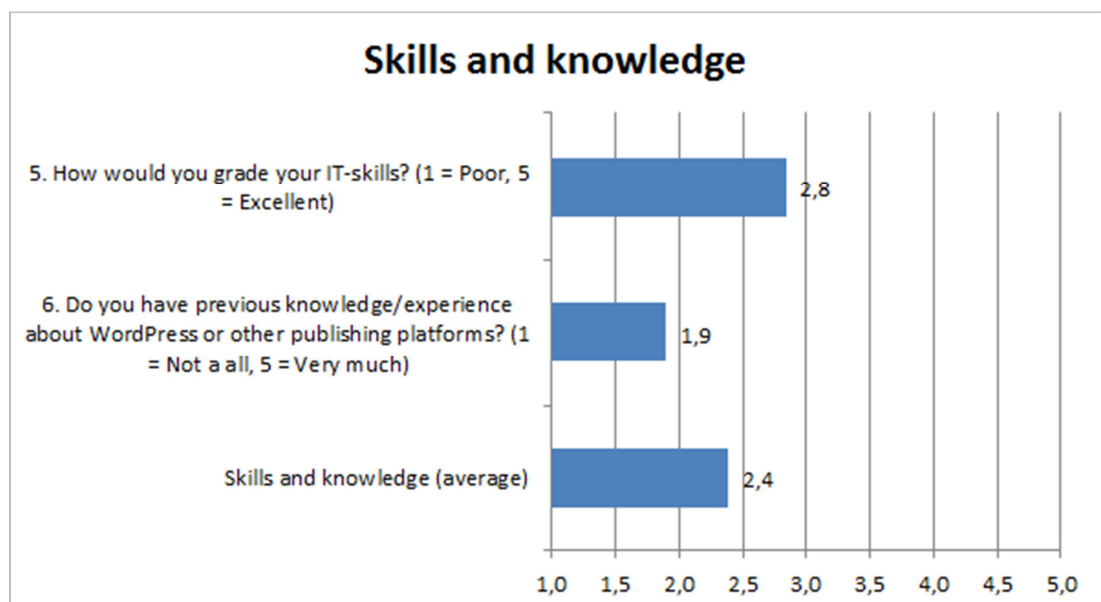


Figure 5. Skills and knowledge (N=22)

There is no significant relationship between IT-skills and how user-friendly platform WordPress is in use (correlation 0,29) but there is effect on IT-skills and how easy it is to maintain the website (correlation 0,43). On the contrary previous knowledge and experience about publishing platforms has more influence on how user-friendly platform WordPress is in use (correlation 0,32) than on how easy it is to maintain the website using WordPress (correlation 0,12). The result on skills and knowledge and usability can be seen below in table 6.

Table 6. Skills and knowledge and usability (N=22)

Correlation -1=Inverse correlation 0=No correlation +1=Strong correlation	16. How user-friendly platform is WordPress in use?	17. How easy is it to maintain your website using WordPress?
5. 1=Poor, 5=Excellent 6. 1=Not at all, 5=Very much	1=Not at all user-friendly 5=Very user-friendly	1=Very difficult 5=Very easy
5. How would you grade your IT-skills?	0,29	0,43
6. Do you have previous knowledge/experience about WordPress or other publishing platforms?	0,32	0,12

Limitations

Overall limitations in the working ability, environment or equipment can decrease usability. Therefore the respondents were also asked if there were any limitations in using the website as the final area of the context of using the website. 14 respondents replied that there are no limitations in using the site. The rest 8 respondents answered that there are some limitations regarding the equipment, time usage, publishing and modifying the content and graphics in the website as well as the platform itself. The division of percentages between the answers has been demonstrated below in table 7.1.

Table 7.1. Limitations (N=22)

7. Are there any limitations for you in using the website (environment, equipment, disabilities)?	
Yes	36%
No	64%

Limitations do not have significant influence on the usability of WordPress. Below in table 7.2 it can be seen that there are no big differences between the answers with limitations and without.

Table 7.2. Limitations (N=22)

7. Are there any limitations for you in using the website (environment, equipment, disabilities)?	16. How user-friendly platform is WordPress in use?	17. How easy is it to maintain your website using WordPress?
Yes / No	1=Not at all user-friendly 5=Very user-friendly	1=Very difficult 5=Very easy
	In average	In average
No limitations (14 responses)	3,46	3,54
Limitations (8 responses)	3,13	3,63

8.1.2 Goals

The respondents' reasons for choosing a WordPress based website and the primary goals for the sites were asked in order to map out the goals. All of the 22 respondents answered that they chose to have a WordPress based website because Go:group had recommended to use it. Other reasons were that competitors also use it (2 responses), the customers were already familiar with the employees of Go:group (2 responses) and that WordPress is a simple, good, flexible, functional as well as affordable open source platform (7 responses). In addition one (1) of the respondents said that WordPress is easy and fast to execute, use, modify and update. Based on the responses the most common primary goal for the website is to share information about the company, their work, products as well as services and to have their contact information

available (11 responses). Other main goals were to create visibility and increase consumers' awareness of the brand and company by creating traffic to the website (7 responses), to reach and interact with fans, customers and target groups through the site (5 responses) and to receive more sales (5 responses). Secondary goals for the website were writing own stories in blog and Twitter, as well as marketing, advertising and recruiting through the site.

Go:group is especially interested in how often the users of the websites plan to maintain or update the website versus how often they actually do it. The scale was from 1 as "never", 2 as "yearly", 3 as "monthly", 4 as "weekly" to 5 as "daily". 15 respondents answered that they maintain and update the site as often as they plan to. The remaining 7 respondents answered that they update the site more seldom than they plan to. The answers of each respondent can be seen below in table 8.1 as a numeric table.

Table 8.1. How often plans and actually maintains/updates the site numeric table (N=22)

10. How often plans to maintain/update the site	10. How often actually maintains/updates the site	Number of responses
1=Never, 2=Yearly, 3=Monthly, 4=Weekly, 5=Daily		N=22
5	5	1
5	4	1
4	4	8
4	3	1
3	3	5
3	2	4
3	1	1
1	1	1

Below in figure 6 the answers of how often the respondents plan to maintain or update the website versus how often they actually do it have been demonstrated graphically to show the results more clearly. The green balls show the answers where the frequency of planning equals to the actual circumstances, the yellow balls show the answers where the plan and actual situation vary one point and the red ball shows the

answer which differs two points. The size of the ball indicates the number of respondents who answered the same answer.

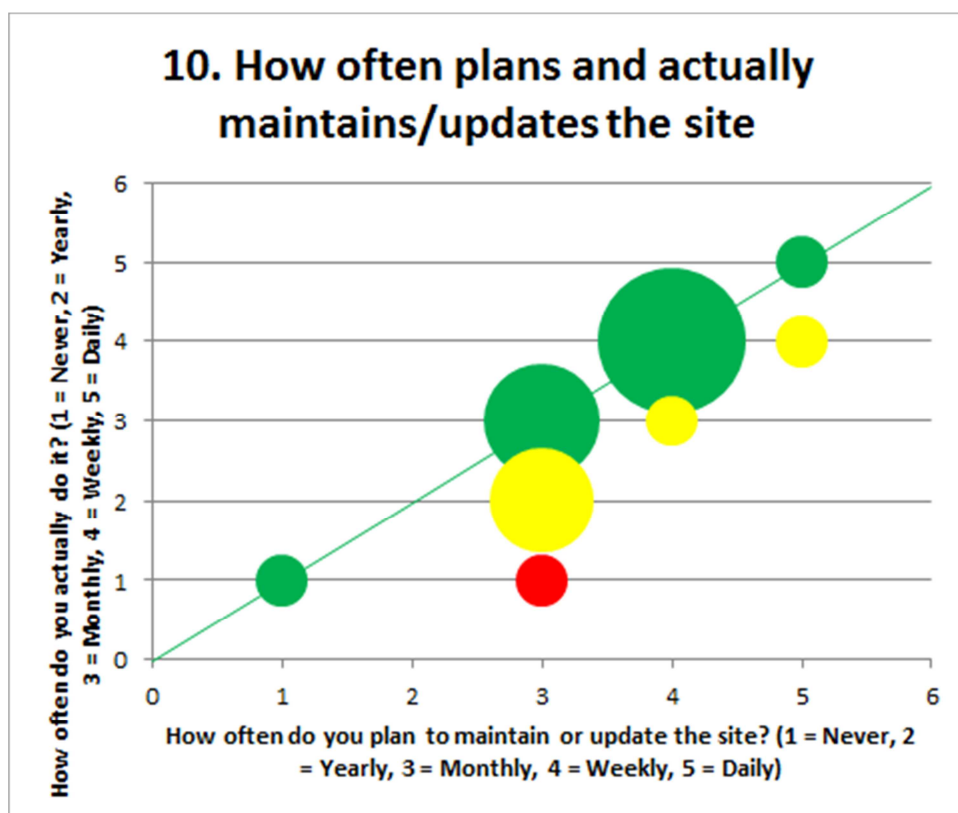


Figure 6. How often plans and actually maintains/updates the site graphic table (N=22)

Below in table 8.2 it can be seen that there is rather strong correlation between how often the respondents plan to maintain or update the website, how often they actually do it and how user-friendly and easy to use platform WordPress is. So the more often the respondents plan and actually maintain or update the site, the more user-friendly and easy-to-use they find WordPress.

Table 8.2. Frequency and usability (N=22)

Correlation -1=Inverse correlation 0=No correlation +1=Strong correlation	16. How user-friendly platform is WordPress in use?	17. How easy is it to maintain your website using WordPress?
1=Never, 2=Yearly, 3=Monthly, 4=Weekly, 5=Daily	1=Not at all user-friendly 5=Very user-friendly	1=Very difficult 5=Very easy
10. How often do you plan to maintain or update the site?	0,40	0,57
10. How often do you actually do it?	0,44	0,55

It can be discovered that the respondents who maintain and update the site as often as they plan to find WordPress more user-friendly and easy to use than the users who update the site more seldom than they plan to. The results have been categorized below in table 8.3 between the users who update the site as often as they plan to, the users who update the site one point lower than planned and the users who update the site two points lower than planned.

Table 8.3. Frequency and usability (N=22)

10. How often do you plan to maintain or update the website /How often you actually do it?	16. How user-friendly platform is WordPress in use?	17. How easy is it to maintain your website using WordPress?
1=Never, 2=Yearly, 3=Monthly, 4=Weekly, 5=Daily	1=Not at all user-friendly 5=Very user-friendly	1=Very difficult 5=Very easy
	In average	In average
Actually as often as plan (15 responses)	3,50	3,63
Actually response 1 lower than planned (6 responses)	3,00	3,50
Actually response 2 lower than planned (1 responses)	3,00	3,00

8.1.3 Usability measurements criteria

Efficiency and productivity

Efficiency was measured by the time and accuracy used to perform tasks and relearning matters. Furthermore productivity was measured by how many functions the user has learned and how many users have performed the tasks.

The respondents were asked how much time they spend maintaining the site each time on a scale from 1 as “none” to 5 as “several hours”. The other points are scaled approximately as 2=5-10 minutes, 3=15-30 minutes and 4 =one (1) hour. The average answer was 2,7/5 which is below the middle, so approximately 10-15 minutes each time. The respondents told that the time used for maintenance also depends on the tasks so the average time was taken into consideration in this study. The respondents were also asked how many functions they have learned on a scale from 1 as “none” to 5 as “everything possible”. The answer was even lower than in the previous questions as 2,5/5. The respondents told that Go:group had shown them the functions they have learned but that there could still be more to learn.

In addition the respondents were asked how fast errors can be repaired if they occur on a scale from 1 as “not at all” to 5 as “instantly”. The cause for the errors is examined first and then repaired. One of the respondents told that the repairing of errors due to the user can be rated as 5/5 and the errors due to the platform can be rated as 3/5, so the average of those answers has been taken into consideration. The average number of all the responses is quite high (3,7/5), so the errors can be repaired fairly fast. The average answer of efficiency and productivity is 3/5 which is right in the middle of the scale, so based on that criteria WordPress is not poorly usable but not very usable either. Below in figure 7 the average results of the answers can be seen as a chart.

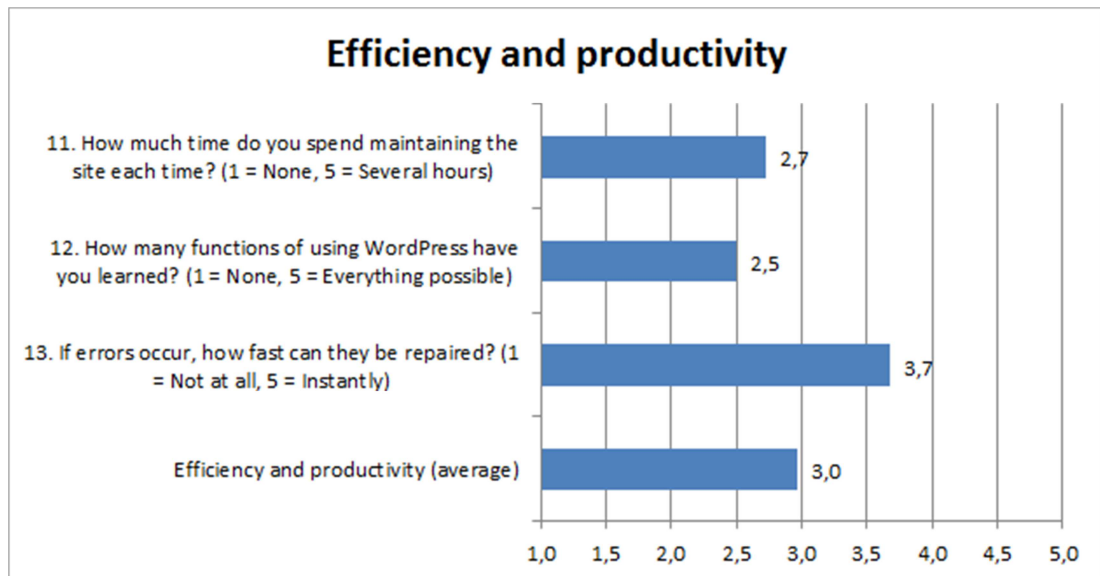


Figure 7. Efficiency and productivity (N=22)

Effectiveness

Effectiveness was measured based on how often the user of the site is able to complete tasks and find information. In addition the respondents were asked which maintenance tasks of the website take most time or are difficult to complete. The most common area which is difficult and time-consuming for the users is maintaining the content of the site (6 responses). The second most difficult maintenance area is graphics and visual appearance including updating the site's colours, fonts, pictures, headings, placements and layouts (5 responses). One (1) respondent answered that nothing is difficult or time consuming whereas three (3) of the respondents replied that everything is difficult. Two (2) of the respondents answered that tasks that are performed rarely and require remembering are difficult as well as time-consuming. One (1) respondent said that making variation products and downloading YouTube-videos is difficult because the user does not know how to do it. Three (3) respondents said that downloading data, making statistics and updating profiles are easy but time-consuming.

From the point of view of usability it is important that the desired tasks are completed. As the usability measurement criteria effectiveness discovers that the average number of responses to question 14: "How often do the maintenance tasks remain uncompleted" is 3,6/5, so at least more than half of the tasks are being finished but the rate could still be higher. The answers can be seen below in figure 8.

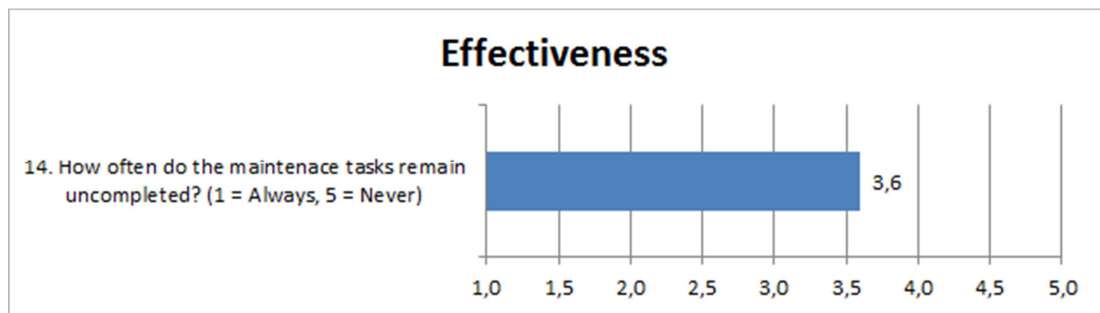


Figure 8. Effectiveness (N=22)

Satisfaction and pleasantness

Satisfaction was measured by how satisfied the users are with the interaction of the website and pleasantness was measured by how easily the user learned to use the product. Moreover the respondents were asked whether they had expectations of WordPress and were they met. First the respondents were asked how easy it was to learn how to use WordPress on a scale from 1 as “very difficult” and 5 as “very easy”. The average answer to that question was 3,3/5. Some of the respondents also added additional comments to this question. One (1) of the respondents who answered 1/5 said that they were not enthusiastic about learning to use the platform and did not have enough time which made the learning process more difficult. One (1) of the respondents who answered 3/5 said that it was difficult to learn how to use WordPress, because the manual was only in English and not in Finnish. Another respondent who answered 3/5 said that it would require more familiarization with the platform in order to reach routine. Finally one (1) more of the respondents who also gave further comments said that they still have a lot of learning to do and now the use of the platform requires a lot of thinking. That respondent answered 2/5 to this question.

Questions 16 and 17 are used to compare the context of using websites and the goals to the usability and user-friendliness of WordPress. Question 16 “How user-friendly platform is WordPress in use?” was measured on a scale from 1 as “not at all user-friendly” to 5 as “very user-friendly”. The average answer to that question was 3,3/5. One of the respondents who answered 5/5 also added that WordPress is user-friendly platform once the user has learned how to use it. Question 17 How easy is it to main-

tain your website using WordPress” on a scale from 1 as “very difficult” to 5 as “very easy” gave the average result of 3,6/5.

In addition the respondents were asked to describe the visual appearance of WordPress on a scale from 1 as “not at all pleasing” to 5 as “very pleasing”. The average answer to that question was 3,5/5. One of the respondents who answered 2,5/5 said that the visual appearance of WordPress is not very smartly executed. The respondents were also asked if they would recommend using WordPress to others on a scale from 1 as “definitely not” to 5 as “definitely yes” and 3 as “maybe” being in the middle of the scale. The average result for it was the best of the usability measurement criteria satisfaction and pleasantness as 3,9/5. One (1) of the respondents added that they feel that WordPress is good, global and integrated system. Equally one (1) of the respondents commented that they would recommend the platform for small and medium sized companies but not necessarily to large enterprises. Another respondent said that if there would be more training than the two (2) hours that was provided for them the platform could be recommended and one (1) of the respondents said that there are better platforms than WordPress.

Moreover the respondents were asked how often they are frustrated when using WordPress on a scale from 1 as “very often” to 5 as “never”. The average answer to that was 3,2/5. One (1) of the respondents added that they become frustrated to themselves when using WordPress because they use the site so seldom that they do not know how to use it and another respondent replied that they feel that there are shortages in the platform. Finally the respondents were asked how likely it is that they would use the platform more if it was more user-friendly on a scale from 1 as “very likely” to 5 as “very unlikely”. The average result of this question was the worst of this measurement criteria being only 2,8/5. This means that quite many users of the website would use the platform more often if it was more user-friendly. One (1) of the respondents replied that time is the issue for using the site more rather than the user-friendliness of the platform. The average result of satisfaction and pleasantness was 3,4/5 which is better than efficiency and productivity but worse than effectiveness. The answers can be seen below in figure 9.



Figure 9. Satisfaction and pleasantness (N=22)

As part of the usability measurements criteria of satisfaction and pleasantness the respondents were also asked if WordPress met their expectations. Majority of the respondents (64 %) answered that WordPress met their expectations, a bit over one fourth (27 %) of the respondents replied that they did not have previous expectations and only 9 % of the respondents answered that WordPress did not meet their expectations. The division of the percentages can be seen below in table 9.

Table 9. Satisfaction and pleasantness; expectations (N=22)

19 Did WordPress meet you expectations	
Yes	64%
No	9%
Did not have expectations	27%

Learnability

Learnability was measured through productivity, efficiency and pleasantness of the website. The questions were 23 “Do you know how to use the website?” on a scale from 1 as “not at all” to 5 as “very well” and 24 “If yes, how long did it take to learn how to use the website?” on a scale from 1 as “did not learn”, 2 as “years”, 3 as “months”, 4 as “weeks” and 5 as “instantly”. In that question the last option on the scale (5=instantly) was interpreted as a couple of times after posting information, couple of hours and a couple of days. On hindsight in the question 24 the last option could have been defined more clearly so that the respondents would have not needed to clarify their answers separately. In addition the respondents were asked how often they need external help for completing tasks on a scale from 1 as “very often” to 5 as “never”. One (1) of the respondents added that more help would be needed if they updated the website more because at the moment they rarely update the site.

The average answer of learnability is 3,4/5 which is on the positive side. However there were quite big differences between the answers. Question 23 “Do you know how to use the website?” gave the worst result as only 2,9/5. On the other hand the next question 24 “If yes, how long did it take to learn how to use the website?” gave the best result of learnability as 4/5. Even so three (3) of the respondents added that they still do not know everything. The averages of the answers can be seen below in figure 10.

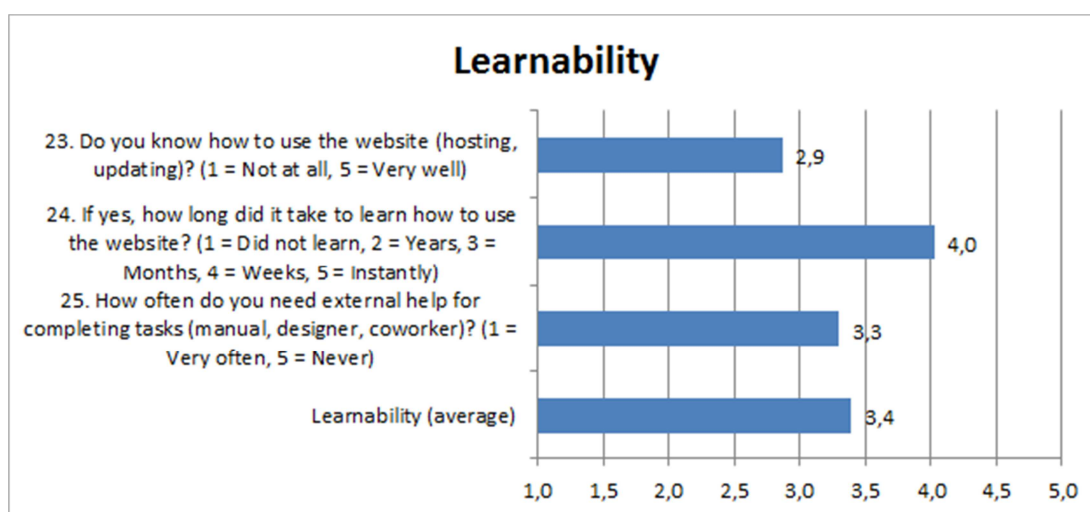


Figure 10. Learnability (N=22)

Memorability

Memorability was measured by how much the user remembers about the task completion of the website. The respondents were asked how much they remember about performing the maintenance tasks on a scale from 1 as “nothing much” to 5 as “everything”. The average answer stayed below the middle in 2,9/5 which is the lowest answer from the usability measurements criteria. One (1) of the respondent who answered 5/5 said that the answer is based on the memorability of the tasks that they know how to do but they have not yet learned all of the maintenance tasks. The answer can be seen as chart below in figure 11.

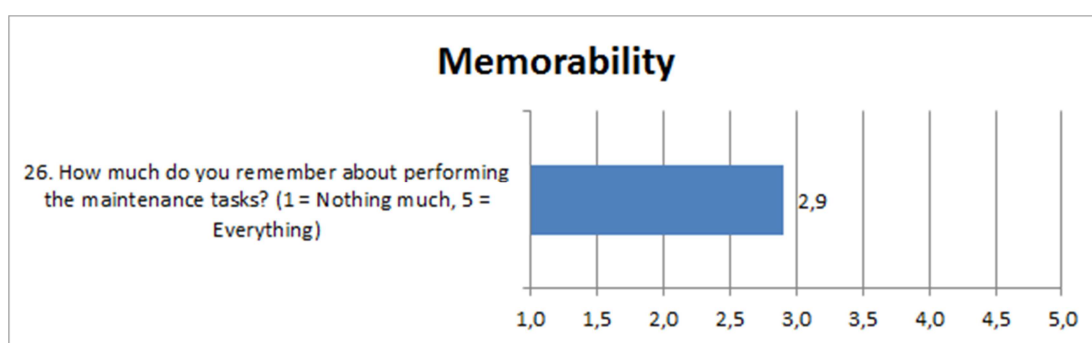


Figure 11. Memorability (N=22)

Errors and faultlessness

The last usability measurements criterion was errors and faultlessness. It was measured by how many errors are made by the users, how bad the errors are and how easy it is to repair them. The respondents were asked how often they are not able to complete desired tasks in the website due to errors in use on a scale from 1 as “very often” to 5 as “never”. They were also asked that if errors occur, how bad they are on a scale from 1 as “severe” to 5 as “minor”. Lastly they were asked how easy it is to repair the errors on a scale from 1 as “very difficult” to 5 as “very easy”. To this last question one (1) of the respondents added that they do not repair the errors themselves because it is outsourced. Another respondent said that if coding is required for repairing the errors they contact company Go:group but otherwise they manage the errors by themselves. The average answer of errors and faultlessness amounted as 3,5/5 which can be seen below in figure 12 with the other results of this criterion.

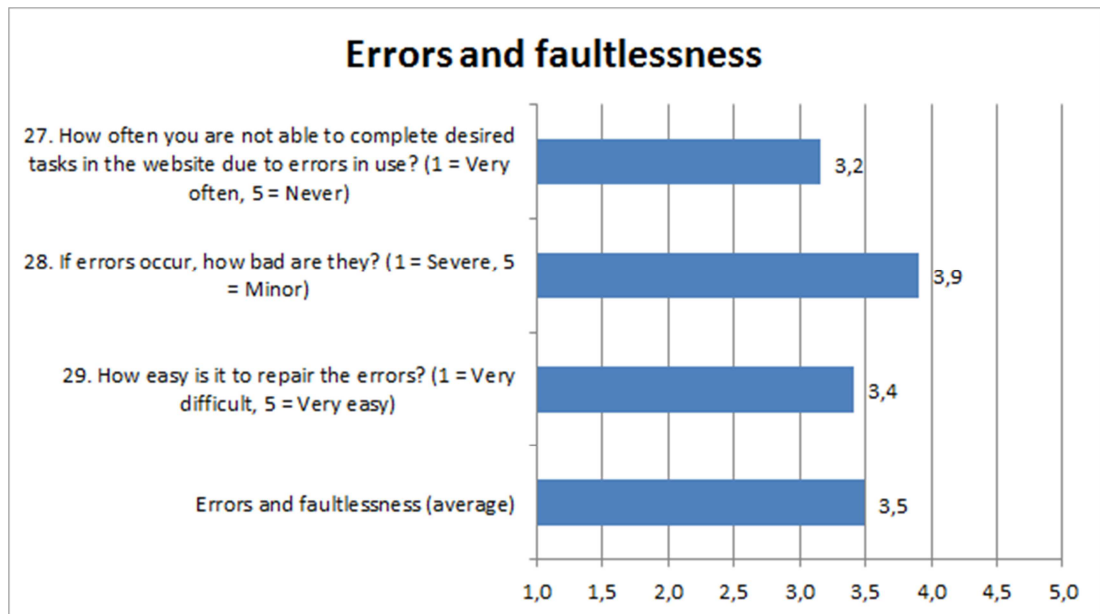


Figure 12. Errors and faultlessness (N=22)

8.1.4 Outsourcing

The case company suggested asking the customers about their interest towards a maintenance contract of the websites. The reasons for preferring or not wanting the contract were also asked, in addition to the range of payment that the customers would be willing to pay for the maintenance contract monthly. Most of the respondents (64 %) were interested in a maintenance contract. The reasons for wanting the contract were enhancing time usage, utilizing expertise and reducing the effort needed for learning themselves. 36 % of the respondents (8 users) would not want a maintenance contract because they do not have the recourses for it, the content of the website can be updated only by the company themselves or that they want to have also internal expertise. The responses can be seen below in table 10.1.

Table 10.1. Outsourcing (N=22)

30. If you had an option to have a maintenance contract for the website, would you prefer it?	
Yes	64%
No	36%

Finally the respondents were asked how much they would be willing to pay for a maintenance contract meaning that they would not have to spend any time maintaining the website. Clear majority (73 %) of the respondent answered that they would be willing to spend 0-50 euros per month. From the total of 16/22 respondents who replied this option, eight (8) of the respondents were not interested in the contract, so their answer was 0 euros per month. None of the respondents was willing to pay the most expensive option 400-600 euros per month. 14 % of the respondents were willing to pay 50-100 euros per month, 5 % 100-200 euros per month and 9 % 200-400 per month. One (1) of the respondents said that at the moment they would be willing to pay a maximum of 50 euros per month because their operations are not so active at right now but when their business activates the value also increases. The percentages can be seen below in table 10.2.

Table 10.2. Outsourcing payment (N=22)

31 How much would you be willing to pay for a maintenance contract, meaning that you do not have to spend any time maintaining your website?	
a. 0-50€/month	73%
b. 50-100€/month	14%
c. 100-200€/month	5%
d. 200-400€/month	9%
e. 400-600€/month	0%

8.2 Analysis of reliability, validity and sensitivity of the data

The reliability of the survey was estimated using the Confidence function in Microsoft Excel. The confidence interval for the user friendliness (question 16 “How user-friendly platform is WordPress in use?”) on confidence level 90 % in the selected sample was 3 to 3,7 in a scale from 1 as “not at all user-friendly” to 5 as “very user-friendly”. The actual results for question 16 from the respondents was 3,3/5 which fits to the scale of the confidence level. Also the perception of how easy it is to maintain websites with WordPress (question 17 “How user-friendly platform is

Word-Press in use?") places in the calculated confidence level scale from 3,3 to 3,8 because the actual answer from the survey for this question was 3,6/5 on a scale from 1 as "very difficult" to 5 as "very easy". As the results of the survey can be placed into the confidence level scale it can be concluded that the survey is reasonably reliable. (Sauro & Lewis 2012, 187.)

The Pearson correlation coefficients were calculated between the predictive measure as how often the users actually maintained websites (question 10 "How often do you actually do it?" scale 1=Never, 2=Yearly, 3=Monthly, 4=Weekly, 5=Daily) and the measures of interest as the experienced user friendliness (question 16) and the ease of maintaining websites (question 17). Question 16 gave an answer of 0,44 for the Pearson correlation and question 17 gave a result of 0,55. Positive correlation between the measures shows that the survey is also valid. (Sauro & Lewis 2012, 187.)

To evaluate sensitiveness to experimental manipulation, the average values for the ease of use (question 16) and for the ease of maintaining the websites with Word-Press (question 17) were calculated for the question 15 "How easy it was to learn how to use WordPress?" on a scale from 1 as "very difficult" to 5 as "very easy". The values were calculated separately for the users not experiencing it easy to learn to use WordPress (response to question 15 below 3) and for users with easy to learn (response to question 15 3 or higher). As the results show that the outcomes of the survey can be considered to be reasonably reliable and valid, they also behave according to sensitivity expectations to experimental manipulation. (Sauro & Lewis 2012, 187.)

The results of the sensitiveness of the survey are shown below in table 11.

Table 11. Sensitiveness to experimental manipulation (N=22)

15. How easy it was to learn how to use WordPress?	16. How user-friendly platform is WordPress in use?	17. How easy is it to maintain your web-site using WordPress?
1=Very difficult 5=Very easy	1=Not at all user-friendly 5=Very user-friendly	1=Very difficult 5=Very easy
No (responses below 3, 4 responses)	2,5	3,0
Yes (responses 3 or above, 18 responses)	3,5	3,7

9 SUMMARY AND CONCLUSIONS

The theory of this study starts by defining usability. In this context usability is the quality of a website, ensuring that users can use the product. Usability is part of the usefulness, use and user experiences (UX) of the website and it can be defined as a quality attribute or capability of a product that defines how easy and pleasant the user interfaces (UI) are to use. Term usability can be defined as the amount to which a product can be used by its users to achieve desired goals with effectiveness and productivity, efficiency as well as satisfaction and pleasantness in a context of use. In addition usability is comprised of learnability of the situation, errors and faultlessness as well as memorability of the product. These six (6) usability measurements criteria have been used in this study to measure the usability of websites implemented with open source publishing platform WordPress. The background information for the study was examined through the context of using the website including; user of the website, task, equipment, environment, skills and knowledge as well as limitations. Furthermore the case company's customers' goals and interest towards outsourcing the maintenance of the websites were studied. (ISO 9241-11 1998, 2-19; Nielsen 2000, 8-10; Sinkkonen, Kuoppala, Parkkinen & Vastamäki 2006, 11 & 212; Tullis & Albert 2008, 4; Chaffey 2009, 200; Website of Nielsen Norman Group 2014.)

In addition to the theory of usability also the concept of website was studied. Website can be described as a portal consisting of information in the form of text, images, sounds or videos which is stored on a server in digital form. (Website of Techscio 2014.) The purpose of websites is to offer information about a company's products and services, qualifications and qualities of a person or organization or any other content (Website of Digital Meaning 2012; Website of Nielsen Norman Group 2012). Most usable websites are personalized, do not have excess information and the site's categories are based on research information. (Sinkkonen, Kuoppala, Parkkinen & Vastamäki 2006, 18; Sweeney 2011, 11.) Website management requires several resources from the user of the website and therefore sometimes an external maintenance contract might suit the desired goals and needs better. (Chaffey 2009, 110-111; Website of Digital Meaning 2012.)

Websites implemented with WordPress were the focus of this study and therefore the platform WordPress was also part of the theory. It is a customizable web software which enables the creation of easy to use websites and blogs through an open source publishing platform. Different plugins, widgets and themes are available for transforming the website through the software. WordPress is an open source project meaning that hundreds of people are working on it globally and it can be used without license payments. Over 600 million people are using WordPress as the platform of their website, including the customers of Go:group. (Website of WordPress 2014; Website of WP-opas 2014.)

The empirical part of the study was based on the gathered theory and the survey which was executed to the customers of Go:group answered to the research problem: How do the customers of Go:group perceive the usability of websites implemented with open source publishing platform WordPress? Through analysing the results of the survey a conclusion could be made that in general the case company's customers find the websites implemented with WordPress more usable than unusable with the total average of 3,3/5 in a scale from 1 being not usable to 5 as usable.

Effectiveness as usability measurements criteria gave the best average results according to usability of the websites (3,6/5) and memorability gave the worst results (2,9/5). Effectiveness means that the users are able to complete specified goals and

tasks accurately and successfully. This was measured based on how often the users of the site are able to complete tasks and find information. Usability measurement criteria memorability on the other hand was the only area which gave results of bad usability. From the point of view of usability, memorability describes how easily users can return to the ability to perform tasks after period of a time of not using the site. Memorability was measured by how much the user remembers about the task completion of the website. (ISO 9241-11 1998, 2; Tullis & Albert 2008, 8 & 64; Chaffey 2009, 627; Sweeney 2011, 136 & 297; Website of Nielsen Norman Group 2012.)

The other measurements criteria; satisfaction and pleasantness (3,4/5), learnability (3,4/5) as well as errors and faultlessness (3,5) gave positive results regarding the usability of websites implemented with WordPress. Criteria efficiency and productivity gave neutral result being in the middle of the scale as 3/5. The averages of each usability measurement criteria can be seen below in figure 13.

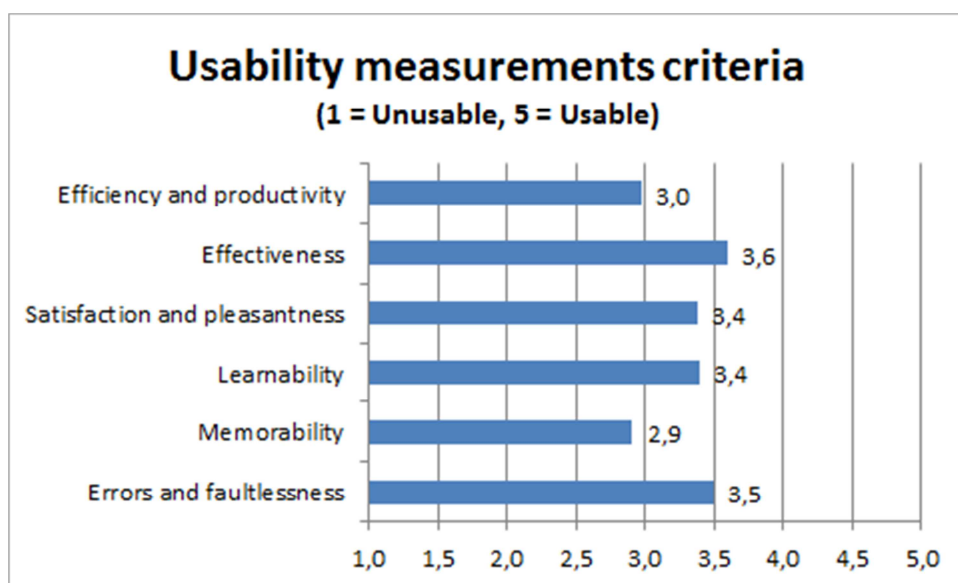


Figure 13. Usability measurements criteria summary (N=22)

The part of the study about the context of using the website gave background information about the user of the website, task, equipment, environment, skills and knowledge as well as limitations. It was quite interesting to find out that both equipment and environment have a bigger influence on how user-friendly the users find WordPress than to how easy it is to use the platform. It could have been thought that

those areas of the context of using the website affect more to how easy it is to use the site than to how user-friendly the platform actually is because they are external factors.

The case company was especially interested about the research findings of the users' goals for the website because they revealed the relation between how often the users plan to update or maintain the site and how often they actually do. It was quite surprising that most of the respondents (15/22) maintain their site as often as they plan to. Six (6) of the respondents answered that they update their site somewhat more seldom than they plan to and only one (1) of the respondents replied that they maintain the site much more seldom from planned. These results were fairly unexpected because the case company had thought that usually it is the case that most of the clients update their sites more seldom than they plan to.

In addition the findings of outsourcing the maintenance of the websites were especially interesting for the case company. Although the company has not offered outsourcing services previously, majority (14/22) of the respondents said that they would be interested in a maintenance contract of the website. This is really useful information for the company because if they can utilize this opportunity, they will be able to lengthen the customer relationship with the already existing customers. The company can create more revenue with less cost as well as serve the customers better because the clients would be willing to pay for outsourcing services in return of more professional websites. Most of all Go:group would be able to meet the customers' needs for the websites in an improved way and the customers would have websites which reach their desires and standards continuously.

As a conclusion of this study, based on the research objectives for the theoretical part and the research findings, it can be said that usability is the quality of a website, ensuring that users can use the product. The components of usability are context of using the website, goals for it, usability measurements criteria and the website itself. The user of the website affects usability in a way that the more users there are the more user-friendly and easy to use the users find WordPress. The task affects usability in a way that the more often particular tasks are completed the easier it is to accomplish them. Equipment and environment on the other hand affect how user-

friendly the users feel that WordPress is in a way that the better they are the more usable the users find the platform. Skills and previous experience and knowledge of the user give the basis for achieving usability and limitations do not have significant influence on the usability of WordPress. Goals affect usability in a way that the more often the respondents plan and actually maintain or update the site, the more user-friendly and easy-to-use they find WordPress. Based on the usability measurements criteria it can be said that WordPress is a usable platform for its users. (ISO 9241-11 1998, 2-19; Nielsen 2000, 8-10; Sinkkonen, Kuoppala, Parkkinen & Vastamäki 2006, 11 & 212; Tullis & Albert 2008, 4; 11 & 212; Chaffey 2009, 625-627; Website of Nielsen Norman Group 2012.)

In addition a usable website includes minimized cognitive load and its site navigation, layout, transactional systems, mapping and relevant information corresponds to the user's needs. Websites are portals consisting of information in the form of text, images, sounds or videos which is stored on a server in digital form. Website management tasks include modifying the software which can consist of site modifications, improvements, corrections or adaptations to environment. The maintenance tasks can be managed by prioritizing according to goals and desires for the website and by creating maintenance plan. The platform in the focus of this study, WordPress, is customizable web software which enables the creation of easy to use websites and blogs through an open source publishing platform. (Bevan 2001, 6; ISO/IEC 9126-1 2001, 10; Chaffey 2009, 681; Skills Creator 2010, 62-63; Website of Digital Meaning 2012; Website of Google 2014; Website of Microsoft Office 2014; Website of WordPress.)

Finally the criteria for measuring usability in this study consists of the usability measurements criteria efficiency and productivity, effectiveness, satisfaction and pleasantness, learnability, memorability as well as errors and faultlessness. By studying these measures through testing, the usability of websites implemented with open source publishing platform WordPress could be measured. (Nielsen 2000, 274; Sinkkonen, Kuoppala, Parkkinen & Vastamäki 2006, 9; Tullis & Albert 2008, 47; Website of Nielsen Norman Group 2012.)

Continuing the conclusion of this study based on the research objectives for the empirical part and the research findings it can be concluded that the customers' main purpose and primary goals for using the website are to share information about the company, their work, products as well as services and to have their contact information available. It was discovered that the customers of Go:group do not know how to use the website as well as they should because the average answer to the question of do the users know how to use the website was 2,9/5 on a scale where 1 was "not at all" to 5 as "very well". Due to the fact that the answers of the users to this question were on the negative side of the scale there is still room for improvement in the learning of how to use the website. The average answers for the usability measurements criteria satisfaction and pleasantness (3,4/5) reveals that the customers are rather satisfied with the usability of websites planned and implemented by the case company. Based on the research findings the customers appreciate the effectiveness of WordPress but especially memorability of the platform should still be improved. Finally the last research objective of this study: "How can Go:group improve their processes and as a result customer satisfaction?" has been answered in the recommendations.

10 RECOMMENDATIONS

After studying and measuring the usability of websites implemented with open source publishing platform WordPress, it was discovered that the usability measurements criteria memorability gave the worst results. In average the customers of Go:group felt that they would grade their remembering of the maintenance tasks closer to "nothing much" than to "everything". Therefore the case company should concentrate on the customers' memorability of the tasks performed on the website and how it can be improved. Due to the fact that memorability requires learning, the usability measurements criteria learnability needs to be also taken into account in order to reach the goal of improving usability of the websites for the customers of Go:group. In addition it was found out that the majority of Go:group's customers (64 %) would be interested in a maintenance contract, meaning that they would not have

to use any time updating or maintaining the website. This is really useful information for Go:group because if the company can utilize this opportunity, they will be able to offer additional services to the already existing customers. So the recommendations for the case company are concentrated on the usability measurements criteria memorability in addition to learnability as well as outsourcing.

Since there are different parts of the human memory, creating comprehensive memories requires different ways of providing and storing information. In order to improve the customers' experience of the website's usability the goal is to store the knowledge and skills for using the website in the long-term memory. At the moment the information is stored in the users' working memory by repetition. This has been the bottleneck of using the website because the information stays in the memory only for a short time and because if some of it is forgotten the users need to learn the tasks again after a period of time not using the website. (Sinkkonen, Kuoppala, Parkkinen & Vastamäki 2006, 149-156.)

First of all it should be ensured that the customers are motivated and have enough time for learning how to use the website. As memorizing by repetition is not the best long-term option, learning by repetition is also difficult without understanding the background information and core functions of the website. Therefore Go:group should give their customers all the necessary theory and information needed for using the website in the beginning before starting to use the website. The material should be in the form of clear and informative instructions and guidelines and it should be explained in an understandable language. In addition the background information should be personalized because it is easier to learn and remember aspects that are personal to the user. After reading and comprehending the information, the customers should be given a chance to try to use the website in such way that Go:group can provide clear and constructive feedback on how to improve the usage. The feedback should include information of what happened and how it can be improved. Multi-level feedback with additional information can also be used. (Sinkkonen, Kuoppala, Parkkinen & Vastamäki 2006, 88 & 193-198; Tullis & Albert 2008, 64.)

After teaching how to use the website, the remembering of how to perform tasks can be made easier by providing such an environment that supports working and reduces actual data that needs to be remembered. It is easier to recognize matters than to remember them entirely from scratch, so Go:group should offer increased high quality user support including employees, databases, stage by stage manuals and different site elements. There could be an active maintenance support system where the customers can ask questions and receive answers or help as fast as possible. By improving the memorability as well as learnability of the websites, the usability will increase resulting as decreased errors and time usage which will in turn increase customer satisfaction. (Sinkkonen, Kuoppala, Parkkinen & Vastamäki 2006, 147-157 & 236; Tullis & Albert 2008, 52.)

Go:group offers tailor-made products and services for their customers, so the teaching and learning process of their products should also be structured according to the clients' needs because everyone has different skills and knowledge. At the moment the company provides two hour training for most of their clients but is still in contact with the customers even after the implementation of the website. The company should create and offer additional training packages for the customers. The company could promote additional repetition training for their clients after implementing the website and after the clients would have been using the website for themselves. They could reason the training by increased efficiency and pleasantness of use as well as more professional and comprehensive use and outcome of the website. The training should always be based on the users' previous knowledge structures because it is easier to change actions when compared to old habits. The problematic features for the client as well as the desired goals should have a special emphasis during the training. (Sinkkonen, Kuoppala, Parkkinen & Vastamäki 2006, 182 & 236.)

Learning new skills and knowledge of how to use the website and remembering all this information requires time, motivation and desire. Most of the users of the websites implemented by Go:group said that they do not have enough time or skills to maintain the websites as much as they would like to. Therefore 14 out of the 22 customers said that they would be interested in a maintenance contract of the website provided by the case company. The company should offer the contract after implementing the website and if the customer would not be interested then, contact the

customer after some months to ask whether they are still content with their own maintaining of the website or not. The company should keep the price in the range of 50 euros per month at least in the beginning because most of the customers would be willing to pay that much of the maintenance contract. The company could also provide maintenance services for separate larger updates when the price would be negotiated depending on the task.

Creating content for the website was the reason for some of the customers (6/22) of Go:group why they were not interested in a maintenance contract. For few fields of businesses it is impossible to outsource writing content for the sites because there might be restrictions regarding the publication of content or the data needs to be updated constantly without possibility for error. Even so copywriting is part of Go:group's services and with cooperation and planning with the customer it is possible to outsource also the content of websites.

The leading specialist of information security in the National Cyber Security Centre, Erka Koivunen, states that old software and lazy maintenance create vulnerability for servers and platforms. According to Koivunen especially the blog platform of WordPress and the coding language Hypertext Preprocessor (PHP) used in WordPress can create problems. He says that: "WordPress is easier to put up and functioning than to maintain in a proper way." This can be used as a reason for the maintenance contract. Even though WordPress is promoted as easy to use because it is an open source publishing platform, the usage still requires expertise and knowledge. If the user of the website does not have enough resources for maintaining the website in a way that they want to, it would be a better option to choose a maintenance contract from Go:group. (Kärkkäinen 2014; Website of WordPress 2014.)

If the usability of website implemented with WordPress would be studied more deeply in the future, it could be done through studying the end users of the websites. In this study they are referred as the viewers of the websites or as the case company's customers' customers. By examining their thoughts about the usability of websites implemented with WordPress and by comparing those results to this study, an even more comprehensive outlook of the usability of websites could be created from a different point of view.

11 FINAL WORDS

All in all I feel that the process of writing my thesis went smoothly and according to the plan. I am really content for finding the topic for this thesis in such an early stage during summer 2013 while working for the case company of this study, Go:group, so that it was easy to start writing the project plan in the autumn. The topic was interesting both for me and the case company, so I stayed motivated throughout the way.

I am also pleased that I was able to find suitable material for the theory part of this thesis without any major difficulties. I could start collecting information and forming the theory with professional and up-to-date sources available to me. For that I want to thank my father for sponsoring and helping me to find some useful books because the library of our faculty did not have all the needed material since my topic is so current and not the most common choice for a thesis. Even so the librarian of our school was a big help during the whole process of this study and offered valuable information for my thesis.

In addition it was really fortunate that my opponent and I had exactly the same timetable and pace for writing our theses. It gave us additional motivation to stay on schedule and finish our work on time. We even had all our three bachelor's thesis seminars at the same day with each other. I received good view points and suggestions for my work during the seminars from the opponent, audience as well as the supervising teacher. My supervising teacher presented good points and support during the process of writing this thesis. It was easy to schedule the seminars and receive feedback of my work.

The planned schedule for my thesis was realistic and I was able to keep up with it, even though I was also attending lectures at school. Applying for a job during early spring 2014 made the process of writing this thesis difficult for a few weeks but after writing a work contract in the beginning of May, I was able to concentrate on finishing my work. The last weeks before returning the final version of my thesis were rather stressful because I started the new job, had my last seminar and finished writing my thesis during that time. Nonetheless I will be looking back at this time with good

memories. During this process I found out plenty of new information about the usability of websites implemented with open source publishing platform WordPress. I am content with the outcome of this thesis and I think that it will be beneficial for Go:group.

REFERENCES

- Alreck P. & Settle R. 1995. The Survey Research Handbook. Second Edition. USA: Richard D. Irwin, Inc.
- Bevan N. 2005. Guidelines and Standards for Net Usability. London: Serco Usability Services.
- Bevan N. 2006. International Standards for HCI and Usability. London: Serco Usability Services.
- Bevan N. 1999. Quality in Use: Meeting User Needs for Quality. London: Serco Usability Services.
- Bevan N. 2001. Usability Issues in Web Site Design. London: Serco Usability Services.
- Bevan N. 2003. Usability Net Methods for User Centred Design. London: Serco Usability Services.
- Bias R. & Mayhew D. 2005. Cost-Justifying Usability: An Update for the Internet Age. San Francisco: Elsevier, Inc.
- Chaffey D. 2009. E-Business and E-Commerce Management: Strategy, Implementation and Practice. England: Marketing Insights Limited.
- Goodman E., Kuniavsky M. & Moed A. 2012. Observing the User Experience: A Practitioner's Guide to User Research. Waltham: Elsevier, Inc.
- ISO 9241-11. Ergonomic requirements for office work with visual display terminals (VDTs). Part 11: Guidance on usability. 1998. Finnish Standards Association SFS. Helsinki: SFS.
- ISO/IEC 9126-1. Software engineering. Product quality. Part 1: Quality model. 2001. Finnish Standards Association SFS. Helsinki: SFS.
- Kärkkäinen H. 2014. Suomalaisoperaattorin verkossa pesii haittaohjelma – mitään ei tapahdu. Digitoday 10.5.2014. Referred 17.5.2014. <http://digitoday.fi>
- Nielsen J. 2000. Designing Web Usability. USA: New Riders Publishing.
- Noyes J. & Baber C. 1999. User-Centred Design of Systems. London: Springer-Verlag.
- Rohrer S. 2009. User Experience Research Methods in 3D: What to Use When and How to Know You are Right. Presentation at BayCHI, SF chapter of ACM SIGCHI. 13.1.2009.

Sauro J & Lewis J. R. 2012. Quantifying the user experience. Practical Statistics for user research. Waltham: Morgan Kaufmann.

Sinkkonen I., Kuoppala H., Parkkinen J. & Vastamäki R. 2006. Professional Psychology of Usability. Helsinki : IT Press.

Skills Creator. 2010. Microsoft Office Onnistumisen ainekset. Espoo: Microsoft Oy.

Steve K. 2006. Don't Make Me Think: A Common Sense Approach to Web Usability. Berkeley: New Riders.

Sweeney S. 2011. 101 Ways to Promote Your Web Site. USA: Maximum Press.

Tullis T. & Albert B. 2008. Measuring the User Experience: Collecting, Analyzing, and Presenting Usability Metrics. USA: Elsevier, Inc.

Website of Blogger. Referred 17.3.2014. <http://www.blogger.com>

Website of Go:group Oy. Referred 3.12.2013. <http://gogroup.fi>

Website of Digital Meaning. Referred 5.2.2014. <http://digitalmeaning.co>

Website of the Finnish Development Centre of Information Society. Referred 3.12.2013. <http://www.tieke.fi>

Website of Go:films Oy. Referred 2.12.2013. <http://gofilms.fi>

Website of Google. Referred 5.2.2013. <http://support.google.com>

Website of Microsoft Office. Referred 3.12.2013. <http://office.microsoft.com>

Website of Nielsen Norman Group. Referred 14.1.2014. <http://www.nngroup.com>

Website of Techscio. Referred 20.3.2014. <http://www.techscio.com>

Website of The Usability Professionals Association. Referred 19.3.2014. <http://www.usabilityprofessionals.org>

Website of WordPress. Referred 6.2.2014. <http://wordpress.org>

Website of WP-opas. Referred 21.1.2014. <http://wpopas.fi>

MEASURING USABILITY OF WEBSITES IMPLEMENTED WITH OPEN
SOURCE PUBLISHING PLATFORM WORDPRESS

1. CONTEXT OF USE

User of the website

1. Are there several users of the website?

Yes / No

If yes, how many?

Task

2. If/when you maintain the website what kind of areas do you update and which tasks do you perform (blog, content, graphics)? Please give 3-5 examples.

Equipment

3. What is the quality of the equipment that you have for maintaining your website (computer, internet connection)?

1

2

3

4

5

Poor

Excellent

Environment

4. How would you rate the working environment in which you use the website (workspace, coworkers)?

1

2

3

4

5

Poor

Excellent

Skills and knowledge

5. How would you grade your IT-skills?

1	2	3	4	5
Poor				Excellent

6. Do you have previous knowledge/experience about WordPress or other publishing platforms?

1	2	3	4	5
Not at all				Very much

If yes, which platform? Which platform do you prefer?

Limitations

7. Are there any limitations for you in using the website (environment, equipment, disabilities)?

Yes / No

If yes, please clarify?

2. GOALS

8. Why did you choose to have a WordPress based website?

9. What is your primary goal for the website?

10. How often do you plan to maintain or update the site?

1	2	3	4	5
Never	Yearly	Monthly	Weekly	Daily

How often do you actually do it?

1	2	3	4	5
Never	Yearly	Monthly	Weekly	Daily

3. USABILITY MEASUREMENTS CRITERIA

Efficiency and productivity

11. How much time do you spend maintaining the site each time?

1	2	3	4	5
None				Several hours

12. How many functions of using WordPress have you learned?

1	2	3	4	5
None				Everything possible

13. If errors occur, how fast can they be repaired?

1	2	3	4	5
Not at all				Instantly

Effectiveness

14. Which maintenance tasks of the website take most time/are difficult to complete?

How often do they remain uncompleted?

1	2	3	4	5
Always				Never

Satisfaction and pleasantness

15. How easy it was to learn how to use WordPress?

1	2	3	4	5
Very difficult				Very easy

16. How user-friendly platform is WordPress in use?

1	2	3	4	5
Not at all				Very
user-friendly				user-friendly

17. How easy is it to maintain your website using WordPress?

1	2	3	4	5
Very difficult				Very easy

18. How would you describe the visual appearance of WordPress?

1	2	3	4	5
Not at all pleasing				Very pleasing

19. Did WordPress meet your expectations?

Yes / No / Did not have expectations

20. Would you recommend using WordPress to others?

1	2	3	4	5
Definitely not		Maybe		Definitely yes

21. How often are you frustrated when using WordPress?

1	2	3	4	5
Very often				Never

22. How likely is it that you would use the website more if it was more user-friendly?

1	2	3	4	5
Very likely				Very unlikely

Learnability

23. Do you know how to use the website (Hosting, updating)?

1	2	3	4	5
Not at all				Very well

24. If yes, how long did it take to learn how to use the website?

1	2	3	4	5
Did not learn	Years	Months	Weeks	Instantly

25. How often do you need external help for completing tasks (manual, designer, coworker)?

1	2	3	4	5
Very often				Never

Memorability

26. How much do you remember about performing the maintenance tasks?

1	2	3	4	5
Nothing much				Everything

Errors and faultlessness

27. How often you are not able to complete desired tasks in the website due to errors in use?

1	2	3	4	5
Very often				Never

28. If errors occur, how bad are they?

1	2	3	4	5
Severe				Minor

29. How easy is it to repair the errors?

1	2	3	4	5
Very difficult				Very easy

4. OUTSOURCING

30. If you had an option to have a maintenance contract for the website, would you prefer it?

Yes / No

Why? / Why not?

31. How much would you be willing to pay for a maintenance contract, meaning that you do not have to spend any time maintaining your website?
- a. 0-50€/month
 - b. 50-100€/month
 - c. 100-200€/month
 - d. 200-400€/month
 - e. 400-600€/month

AVOIMEN LÄHDEKODIN JULKAISUJÄRJESTELMÄ WORDPRESSILLÄ
TOTEUTETTUIJEN VERKKOSIVUJEN KÄYTETTÄVYYDEN MITTAAMINEN

1. KÄYTTÖTILANNE

Verkkosivuston käyttäjä

1. Onko verkkosivulla useita käyttäjiä?

Kyllä / Ei

Jos kyllä, kuinka monta?

Tehtävä

2. Jos/kun ylläpidätte verkkosivua, mitä alueita päivitätte ja mitä tehtäviä suoritate? (blogi, sisältö, grafiikka)? Antakaa 3-5 esimerkkiä.

Välineistö

3. Minkä laatuinen välineistö teillä on käytössänne verkkosivun ylläpitämiseen (tietokone, internetyhteys)?

1

2

3

4

5

Huono

Erinomainen

Ympäristö

4. Miten arvioisitte työympäristön, jossa käytätte verkkosivua (työtila, työkalut)?

1

2

3

4

5

Huono

Erinomainen

Taidot ja tiedot

5. Miten arvioisitte IT-taitonne?

1	2	3	4	5
Huono				Erinomainen

6. Onko teillä aikaisempaa tietoa/kokemusta WordPressistä tai jostakin muusta julkaisujärjestelmästä?

1	2	3	4	5
Ei yhtään				Erittäin paljon

Jos kyllä, mikä julkaisujärjestelmä? Mistä järjestelmästä pidätte eniten?

Rajoitukset

7. Onko teillä mitään rajoituksia verkkosivun käyttämiselle (ympäristö, välineistö, työkyvyttömyys)?

Kyllä / Ei

Jos kyllä, voitteko selventää?

2. TAVOITTEET

8. Miksi valitsitte WordPress-pohjaisen verkkosivun?

9. Mikä on ensisijainen tavoitteenne verkkosivulle?

10. Kuinka usein suunnittelette ylläpitävänne tai päivittävänne sivua?

1	2	3	4	5
En koskaan	Vuosittain	Kuukausittain	Viikoittain	Päivittäin

Kuinka usein todellisuudessa teette sitä?

1	2	3	4	5
En koskaan	Vuosittain	Kuukausittain	Viikoittain	Päivittäin

3. KÄYTETTÄVYYDEN MITTAUKSEN KRITEERIT

Tehokkuus ja tuottavuus

11. Kuinka paljon käytätte kerrallaan aikaa sivun ylläpitämiseen?

1	2	3	4	5
En yhtään				Useita tunteja

12. Kuinka monta WordPressin käyttämisen toimintoa olette oppineet?

1	2	3	4	5
En yhtään				Kaiken mahdollisen

13. Jos virheitä ilmenee, kuinka nopeasti ne saadaan korjattua?

1	2	3	4	5
Ei ollenkaan				Välittömästi

Vaikuttavuus

14. Mitkä verkkosivun päivittämistehtävät vievät eniten aikaanne/ovat vaikeita suorittaa?

Kuinka usein ne jäävät keskeneräisiksi?

1	2	3	4	5
Aina				Ei koskaan

Tyytyväisyys ja miellyttävyys

15. Kuinka helppoa oli opetella käyttämään WordPressiä?

1	2	3	4	5
Erittäin vaikeaa				Erittäin helppoa

16. Kuinka käyttäjäystävällinen alusta WordPress on käytössä?

1	2	3	4	5
Ei ollenkaan				Erittäin
käyttäjäystävällinen			käyttäjäystävällinen	

17. Kuinka helppoa verkkosivunne ylläpitäminen on käyttämällä WordPressiä?

1	2	3	4	5
Erittäin vaikeaa				Erittäin helppoa

18. Miten kuvailisitte WordPressin visuaalista ulkonäköä?

1	2	3	4	5
Ei ollenkaan				Erittäin
miellyttävä				miellyttävä

19. Täyttikö WordPress odotuksenne?

Kyllä / Ei / Ei ollut odotuksia

20. Suositteletko WordPressin käyttämistä muille?

1	2	3	4	5
En missään tapauksessa		Ehkä		Ehdottomasti
				kyllä

21. Kuinka usein turhaudutte käyttäessänne WordPressiä?

1	2	3	4	5
Erittäin usein				En koskaan

22. Kuinka todennäköisesti käyttäisitte verkkosivustoa enemmän jos se olisi käyttäjäystävällisempi?

1	2	3	4	5
Erittäin				Erittäin
epätodennäköisesti				todennäköisesti

Opittavuus

23. Tiedätkö kuinka verkkosivustoa käytetään (ylläpitäminen, päivittäminen)?

1	2	3	4	5
En ollenkaan				Todella hyvin

24. Jos kyllä, kuinka kauan teiltä kesti opetella käyttämään verkkosivua?

1	2	3	4	5
En oppinut	Vuosia	Kuukausia	Viikkoja	Välittömästi

25. Kuinka usein tarvitsette ulkopuolista apua tehtävien suorittamiseen (ohjekirja, suunnittelija, työkaveri)?

1	2	3	4	5
Erittäin usein				En koskaan

Muistettavuus

26. Kuinka paljon muistatte ylläpitotehtävien suorittamisesta?

1	2	3	4	5
En paljon mitään				Kaiken

Virheet ja virheettömyys

27. Kuinka usein ette pysty suorittamaan haluttuja tehtäviä verkkosivulla käytön virheiden takia?

1	2	3	4	5
Erittäin usein				En koskaan

28. Jos virheitä ilmenee, kuinka pahoja ne ovat?

1	2	3	4	5
Vakavia				Vähäisiä

29. Kuinka helppoa virheiden korjaaminen on?

1	2	3	4	5
Erittäin vaikeaa				Erittäin helppoa

4. ULKOISTAMINEN

30. Jos teillä olisi mahdollisuus verkkosivun ulkoistamissopimukseen, haluaisitteko tehdä sen?

Kyllä / En

Miksi? / Miksi en?

31. Kuinka paljon olisitte valmis maksamaan ulkoistamissopimuksesta, tarkoittaen, että ette joutuisi käyttämään yhtään aikaa verkkosivun ylläpitämiseen?

- a. 0-50€/kuukaudessa
- b. 50-100€/kuukaudessa
- c. 100-200€/kuukaudessa
- d. 200-400€/kuukaudessa
- e. 400-600€/kuukaudessa